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ABSTRACT

The objectives of this publication are to cover the principal forms of professional education and to inform the public on education for the professions. Most of the chapters were originally published as articles in the Office of Education periodical, "Higher Education". The general pattern of the chapters on the several fields of professional education includes: (1) a brief description of the profession and its personnel; (2) a description of the development and current status of education for the profession; and (3) a statement about some problems in the particular field of professional education. Lists of schools are included where they are available and not excessively long. Selected references suggest additional reading for those who desire further information. The appendix includes U.S. census figures for the professions. (Reproduced from best available copy.) (Author/PG)

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Education for the Professions

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OVETA CULP HOBBY, Secretary
Office of Education—SAMUEL MILLER BROWNELL, Commissioner

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Foreword

PREPARATION for the practice of the professions is a striking feature of higher education in the United States. Professional education was begun largely in independent schools, but during the past half century it was brought into the university and there made highly effective.

This development has brought a marked change for the better; indeed it has revolutionized professional education. A scholarly attitude has come to pervade the professional school, standards of training have been raised, and excellent physical facilities, including well-stocked libraries and well-equipped laboratories and clinics, have been provided in most institutions, which make it possible for the students and staffs to do work of high quality.

The influence of the university is clearly evident in the development of professional curriculums. No longer are they dominated by a narrow vocational outlook emphasizing methodology and techniques of practice, although high recognition is given to these functional phases of training. The programs rest on the sciences as a foundation. General education, including the social sciences and the humanities, has also been accepted as an essential feature of the education of professional personnel.

In the university the professional schools have come under the influence of research, which has produced new facts and techniques and shattered the dogmatisms upon which the earlier professional training had been built. The new attitude of mind resulting from research is transforming the professions and making them increasingly useful in their service.

That the citizens of the Nation appreciate the fine services of the professional schools is evidenced by the large support they have provided for them. More and more they have come to realize the significance of the schools in the building of the Nation and the promotion of the welfare of its people. Under a farseeing educational leadership they have cooperated to establish and maintain educational institutions that are unexcelled anywhere in the world.

Although the professional schools are organized for the most part in the universities, they operate with a good deal of autonomy. In many ways they are quite separate from one another. Likewise, the literature dealing with their work is separately published, and the principal facts about each form of professional education are seldom brought together in one publication. An attempt is made to do that in this publication. Here the editor and the authors of the chapters present briefly some of the significant and up-to-date information on the various professions and their education which should prove useful to all who wish to be informed on how our professional personnel are prepared for their work.

SAMUEL MILLER BROWNELL,
Commissioner of Education.

Preface

FOR A LONG TIME there has existed a need for a publication that would describe the principal features of professional education in the United States. Apparently the only attempt to present such a description was made in 1899 and 1900 when the University of the State of New York published a series of bulletins on professional education in the United States which had been prepared by Henry L. Taylor. A general bulletin and one each on theology, law, medicine, pharmacy, and veterinary medicine made up the series. Some of the information in these bulletins was included in a monograph on *Professional Education* prepared by James Russell Parsons, Jr., and published in 1900. The monograph was one of a series; others were on *Scientific, Technical, and Engineering Education; Agricultural Education;* and *Commercial Education*. Since the beginning of the present century there have been no new publications, except brief articles and addresses, that have described professional education as a whole.

Much has been published on professional education, but most of it has had to do with certain phases only. At present there is no general publication which covers the principal forms of professional education. Consequently, one who wishes to inform himself broadly on education for the professions is forced to search widely and read extensively. It is hoped that this publication will be of assistance to such persons; it is directed primarily to them.

Most of the chapters were originally published as articles in the Office of Education periodical, HIGHER EDUCATION. They have been revised to bring them up to date in accordance with the latest available information.

The general pattern of the chapters on the several fields of professional education includes (1) a brief description of the profession and its personnel, (2) a description of the development and current status of education for the profession, and (3) a statement about some problems in the particular field of professional education. Lists of schools are included where they are available and not excessively long. Selected references suggest additional reading fo those who desire further information.

Although most of the chapters after the first tw follow the general outline indicated above, there i some variation among them, as the several autho have desired. Much more information is availab on some fields of professional education than o others, and therefore some chapters are mor extensive than others. Moreover, the length of th several chapters was determined largely by th authors, each writing what appeared to him to cove the subject sufficiently to accomplish the purpo of the book.

A word may be said about the statistics used The data have been collected from various sources Therefore they vary in respect to completeness an comparability. A common deficiency is that th data reported often do not distinguish clearly betwee students enrolled in courses leading to first professional degrees and those in courses leading t graduate degrees. The data used in the variou chapters are the best that are currently available.

This publication was made possible through th assistance of a number of persons. The chapter on education in the various professions—34 in all— were prepared by authors who have had muc firsthand contact with the subjects about whic they wrote. These authors were most cooperativ in preparing the kind of material that was desired and they generously accepted editorial suggestions

Others whose assistance has been most helpf are Ada Jane Kelly, editorial assistant, who rea all the manuscripts with great care and suggeste many editorial changes; Samuel A. Kramer, researc assistant, who checked the data of some of the manuscripts, collected new data as that was necessary and assisted in writing some of the sections o chapters; Gwendolen W. Power, secretary to th editor. The help of all these persons is gratefull acknowledged.

LLOYD E. BLAUCH.

1. The Professions in the United States

A COMPLEX social and economic order such as exists in the United States finds increasing ed for services which can be rendered only by per- ns who are highly educated and trained in partic- ar techniques. The preparation of these persons one of the principal functions of the higher educa- n institutions. As an introduction to a series of cussions of their education it is fitting that con- eration be given to some outstanding features of e professions and their place in the Nation.

hat Are the Professions

In the United States the professions are not always arply distinguished from other vocations or occu- tions.[1] Moreover, in a dynamic social order the ccupational pattern undergoes rapid change and e status of various vocations shifts from time to ne. What was yesterday known merely as an ccupation may tomorrow be so developed as to take n the earmarks of a full-fledged profession. Fur- hermore, new services, professional in character, re continually being devised and developed, as itness for example, the recent development of hysical therapy, occupational therapy, and psychi- tric social work. Within many professions, there a tendency toward division and specialization hich is followed by extended education for the pecialist. Another tendency of the professions is o delegate to subprofessions and technicians certain spects of professional services which do not require s much training as the profession does. Thus ental hygienists, practical nurses, and laboratory echnicians perform services formerly done by den- ists, registered nurses, and chemists. These de- elopments occur because intelligent and ingenious eople invent and refine new, improved, and often omplicated methods of serving mankind's needs nd because the public is willing and able to pay for he improved service.

The professions are the occupations through which people obtain the highly specialized intellectual services. Taken together they constitute the smallest of the broad occupational groups in the Nation as recognized by the United States Bureau of the Census. However, in spite of the relatively small numbers of persons engaged in these services, the day-to-day functioning of the communities and the Nation depends largely upon them. The people look to the professions for designing their machines, structures, and transportation systems; for protecting them in the exercise of their rights and advising them how to carry on their activities in accordance with the law; for healing their broken and sick bodies; for teaching their children the ideals and arts of civilization; for providing their moral and religious guidance; and for helping them in a hundred other ways to live happier and more satisfying lives. Without them civilized society could not be maintained on the present basis.

The place of the professions in the Nation has recently been expressed by Chancellor Henry T. Heald of New York University as follows:

"Largely through the work of professionals, life expectancy has been increased, productive years have been prolonged, and more goods and services have been made available to more people than ever before.

"It might, I think, be reasonably said that the thing we call prosperity and the state of mind we refer to as happiness can both be attributed—insofar as we attain them—to the professions: To their growth, to their ever-increasing assumption of responsibility in providing for the needs and wants of the people.

"There is no gainsaying the great contribution of the professions in the past century. In the building of the Nation, in its conversion to a highly industrialized society, in the winning of two world wars, and in advancing the great worldwide humanitarian programs in which we are now engaged—they have played a major role.

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[1] R. H. Halliday, among others, regards this as a serious situation. See *ccupations*, Vol. 27, p. 530–34, May 1949.

"Fast-moving events in recent years have, whether we like it or not, thrust world leadership and world responsibility upon the Nation. And that means, in large part, upon the professions; for professional people, whether they like it or not, are the ones to whom society looks for leadership."[2]

Definitions

The dictionaries provide some help in understanding professions. In *Webster's New International Dictionary*, second edition, a profession is defined as "the occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes oneself; a calling in which one professes to have acquired some special knowledge used by way either of instructing, guiding, or advising others, or of serving them in some art; as the *profession* of arms, of teaching, of chemist."

A profession is defined in *Funk and Wagnall's New Standard Dictionary of the English Language* as "an occupation that properly involves a liberal education or its equivalent, and mental rather than manual labor; especially one of the three so-called learned professions. Hence any calling or occupation involving special mental and other attainments or special discipline, as editing, acting, engineering, authorship, etc."

Another definition is found in the *Dictionary of Education* (Good) which states that a profession is "an occupation involving relatively long and specialized preparation on the level of higher education and governed by a special code of ethics."

The *Dictionary of Occupational Titles*,[3] prepared by the United States Employment Service, states that the group of professional occupations "includes occupations that predominantly require a high degree of mental activity by the worker and are concerned with theoretical or practical aspects of complex fields of human endeavor. Such occupations require for the proper performance of the work either extensive and comprehensive academic study, or experience of such scope and character as to provide an equivalent background, or a combination of such education and experience." It goes on to say that some professions are primarily concerned with th
development or the practical application of form
and well-organized fields of theoretical knowledg
whereas others are concerned with activities tha
demand acquired abilities which may properly b
considered of a professional character, but may no
require the background of a formal field of knowledg

The United States Bureau of the Census repor
on the occupational groups of the Nation. I
employs the following definition: "A profession
worker is (1) one who performs advisory, admini
trative, or research work which is based upon th
established principles of a profession or scienc
and which requires professional, scientific or techn
cal training equivalent to that represented by grad
ation from a college or university of recognize
standing, or (2) one who performs work which
based upon the established facts, or principles, o
methods in a restricted field of science or art, an
which requires for its performance an acquaintan
with these established facts, or principles, or method
gained through academic study or through extensi
practical experience, one or both."[4]

Years ago it was customary to refer to the thr
"learned professions," so-called because they we
taught in the universities. They were law, medicin
and theology. Since those early times, as w
pointed out earlier, many other vocations ha
acquired professional status, and still others are
process of being elevated to this high place in soci
recognition.

As one considers the professions he needs to ke
in mind another group of occupations now common
known as the semiprofessions. It includes the occ
pations "concerned with the theoretical or practic
aspects of fields of endeavor that require rather e
tensive educational or practical experience, or
combination of such education and experience f
the proper performance of the work" but "are le
demanding with respect to background or the ne
for initiative or judgment in dealing with com
plicated work situations than those fields which a
considered as 'professional.' These occupations a
typically confined to relatively restricted fields
activity, many of them being concerned with th
technical or mechanical details of the broader an
possibly more theoretical fields of endeavor."[5]

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[2] Address on "The Responsibility of the Professions to Future Society" delivered during the 170th anniversary convocation of the board of regents of the University of the State of New York, Albany, N. Y., April 9, 1954. Quoted from a mimeographed copy.

[3] Vol. II.—*Occupational Classification and Industry Index*, 2d ed., Washington. U. S. Government Printing Office, 1949. p. 1.

[4] U. S. Bureau of the Census, *Classified Index of Occupations*, 1940. W
ington, U. S. Government Printing Office, 1940, p. 2. See p. 292 ff.

[5] *Dictionary of Occupational Titles*, Vol. II.—*Occupational Classificatio*
Industry Index, 2d ed., p. 13.

Earmarks of the Professions

Many other definitions of the word "profession" have been published.[6] For present purposes, it is sufficient to note some of the principal earmarks of those occupations that are widely and commonly recognized as professions. Three may be suggested.

Study and training.—The first of these earmarks is: An extended period of specialized study and training is required to learn the methods of service and develop skill in their application. The principal distinguishing characteristic of a profession is the possession of a body of knowledge, a set of attitudes, and a group of skills, collectively called a technique, which enables the members to perform a particular type of service. A profession involves essentially intellectual operations, although in some instances like surgery and dentistry, a high degree of manual skill may also be required. The scientific or institutional knowledge, the attitudes, and the technique or method of procedure essential to expertness have been organized in a program of professional preparation that is appropriate for inclusion in the offerings of a university. The course of education and training is a combination of theory and practice which is enforced through a series of educational requirements and in many instances an examination system provided by the State. The extent of the education preliminary to entrance upon practice represents, as a minimum, graduation from a professional college or university.

Measure of success.—A second earmark of a profession is that, although the services rendered by its members are performed for a fee or a salary, their success is not measured by financial standards but rather by accomplishment in serving the needs of people. Their main driving force is professional spirit rather than the desire for gain; the true measure of their success is the quality of the service they render, not the financial gains they amass. Professional men may become well-to-do, but the meaning and significance of their profession, both for themselves and for the public, is not primarily that they make money but that their service brings intellectual power to their pupils and students, protection to their country, health to their patients. The professional man is sustained by the satisfaction which he obtains from rendering a service well, from gaining the esteem of his fellow professionals, from living up to the solidly established tradition of the little society or professional group of which he is a member, from discharging faithfully the high professional obligation in which he has been indoctrinated. Here is one of the reasons why the professions are generally held in high social esteem. A truly professional man is a dedicated man; he espouses the high ideal of service to his fellow men; he is devoted to his art.

Obviously in this matter the professions stand in contrast with industry and commerce, where the main driving force is the desire for profit.[7] To be sure, in an economic society people do not disparage or deprecate the wish of others to earn money. The capitalist economy, to which the Nation is strongly committed, turns on this motive. Only when it is abused do people discountenance this motive in their business transactions. But they do not apply the financial yardstick to the professions; here they use other standards.

One must not, of course, idealize the professions too much. Unfortunately, every professional group includes some members who do not live up to its standards of practice. A few, by their conduct, demonstrate that their greatest, sometimes their sole, concern is to increase their bank accounts. Moreover, at times a profession as a whole may engage in practices that are hardly in the interest of the public welfare, such, for example, as unduly restricting the number of persons admitted, and opposing the development of new and competing techniques of service. One occasionally hears the question raised whether some of the professions are not tending to be too much influenced by the commercial spirit of the times.

Associations.—A third earmark of a profession is that its members organize associations through which they act collectively to maintain and improve its service. From one another they draw inspiration and learn new ways of performing their services; to one another they freely contribute their ideas, their discoveries, their inventions. These associations distinguish the qualified from the unqualified by admitting to membership only those who measure up to acceptable standards. The associations promote a high standard of professional character and honorable practice. Within their own sphere they serve as sources of authoritative information and advice as the public has need for such assistance.

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[6] See Frances Priscilla DeLancy, *The Licensing of Professions in West Virginia* (Chicago, Ill., The Foundation Press, Inc., 1938), p. 1-16. See also Morris L. Cogan, Toward a Definition of Profession. *Harvard Educational Review*, Vol. 23, No. 1 (Winter, 1953), p. 33-50; and R. W. Tyler, Distinctive Attributes of Education for the Professions. *Social Work Journal*, Vol. 33, p. 55-62, April 1952.

[7] But see Talcott Parsons, The Professions and Social Structure, *Social Forces*, Vol. 17, p. 457-67, May 1939, for a different point of view.

It is a common practice for these professional associations to develop and adopt statements of principles, ideals, and regulations to guide practitioners in their conduct. These codes of ethics, as they are generally called, are characteristic of all well-established professions. It is reported that nowhere else have standards of professional ethics been so extensively formulated in codes as in the United States. Although some of these codes may be rather narrow both in conception and in outlook, they represent honest efforts to raise the standards of professional conduct. Occasionally it is said that some professions do not at all times and at all places enforce their codes with sufficient zeal.

The professions, acting through their associations, engage in other activities that are aimed at improving their service. They take an active interest in the establishment and maintenance of schools for training their future members, they foster and support research related to their service, they create a body of professional literature, and they make definite provision through such means as conferences, seminars, and clinics for practitioners to share their knowledge and experience.

Professional Personnel in the Population

The total number of persons in 23 professions shown in the census of 1950 was 3,813,770 [6]—only about 6.4 percent of the working force in the population. (See table 1.) The comparable percent in 1850 was 1.9 and in 1900, 3.8. The census occupational data possess marked limitations for a detailed study of professional personnel (see appendix), but they are very helpful as showing the general size of the group and its principal subdivisions.

During the past century the professions in the United States grew very rapidly. From 1850 to 1950 the working force as a whole increased about eightfold, but during the same period the professional personnel increased almost twenty-sixfold. They increased faster than any other principal occupational group. This fact is particularly impressive when it is realized that the period covers a large part of the industrial revolution in the United States when the greatest increase might have been expected to develop among craftsmen and machine operators.

Table 1.—Professional occupation groups in the United Sta Census, 1950

Profession	Number of persons		
	Male	Female	Total
Accountants and auditors	327, 119	56, 377	383,
Architects	24, 046	954	25, 0
Authors	9, 949	6, 235	16, 1
Chiropractors	11, 169	1, 915	13, 0
Clergymen	161, 572	6, 847	168, 4
College presidents and teachers	96, 432	29, 208	125, 6
Dentists	72, 949	2, 076	75, 0
Dietitians and nutritionists	1, 386	21, 440	22,
Editors and reporters	62, 183	29, 289	91, 4
Engineers, technical [1]	527, 772	6, 652	534, 4
Farm and home management advisers	6, 231	6, 085	12, 3
Foresters and conservationists [2]	26, 193	859	27, 0
Lawyers and judges	174, 893	6, 333	181, 2
Librarians	6, 394	49, 355	55, 7
Musicians and music teachers	81, 681	79, 626	161, 3
Nurses, professional	9, 863	393, 930	403, 7
Optometrists	13, 865	846	14, 7
Osteopaths	4, 377	790	5, 1
Pharmacists	81, 640	7, 357	88, 9
Physicians and surgeons	180, 532	11, 785	192, 3
Social workers, except group [3]	23, 545	52, 848	76, 3
Teachers [4]	285, 847	839, 836	1, 125, 6
Veterinarians	12, 634	855	13, 4
Total	2, 202, 272	1, 611, 498	3, 813, 7
Total working force [5]	43, 091, 009	16, 551, 990	59, 642, 9
Total population	74, 833, 289	75, 864, 122	150, 697, 3

[1] Includes metallurgists and aeronautical, chemical, civil, electrical, industri mechanical, metallurgical, and mining engineers.

[2] Includes foresters, conservationists, forest rangers, timber cruisers, fa planners, fire wardens, fish culturists, insect-control aides, erosion speciali and some others.

[3] Does not include religious workers.

[4] Includes school commissioners, superintendents, principals, and instruct concerned with academic, physical education, and vocational subjects in publ private, and parochial schools below college level.

[5] Includes all persons in the labor force 14 years of age and older.

Source: U. S. Bureau of the Census, *U. S. Summary of Detailed Characteri tics*, Washington, U. S. Government Printing Office, 1950. Table 124, p. 2 Bulletin P–C, No. 1.

This industrial group increased only about 10 time from 1,911,572 in 1850 to 19,868,349 in 1950. Thi development varied greatly among the profession it was rapid in the new professions such as enginee ing and nursing, and slower in the older fields of la and medicine.

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[6] This number does not include persons engaged in the semiprofessions, and it omits persons in the occupations shown under the heading "Professional, technical, and kindred workers" who do not meet the criteria for a true profession.

Demand and Supply

In recent years there has been much concern about the demand for and the supply of professional personnel. Numerous individuals and organized groups have studied the subject and written on it. Three of these groups are: (1) The Commission on Human Resources and Advanced Training, organized in 1950 and supported by the Rockefeller Foundation; (2) the National Manpower Council, organized in 1951 and supported by the Ford Foundation; and (3) the Committee on Specialized Personnel of the Office of Defense Mobilization, a Government office established in 1953. The function of this committee is to coordinate the work of all the Federal agencies relating to manpower studies. A number of the professions have manpower committees and commissions which consider the demand and supply in their respective fields. The activities of these groups are producing extensive information on the manpower needs and resources of the Nation. They deal with many types of specialized personnel including professionals.

During the past half century there has been a steadily increasing demand for a widening variety of professional personnel, and at the same time there has been an increasing supply of persons trained in the professions. Within the past 15 years marked shortages have appeared in several fields of professional and specialized service, and in some instances the limitations have become critical in the light of the expanding military and civilian needs. The principal shortages are found in dentistry, engineering, medicine, nursing, social work and teaching.[9]

The shortages are unevenly distributed throughout the Nation. In none of these fields are there prospects for a sufficient supply to meet the demand in the near future. In some other fields, particularly law, pharmacy, and the ministry, the supply appears to be sufficient. It can be said that in general, with full employment, advancing productivity, and a continual increase in the national income there is provided an economic basis for continually rising standards of education, medical care, and social service. The prospect then is for a considerably expanded demand for professional personnel.

The Professions and the State

As the population of the Nation increased, as social and economic life became more complex, and as individuals came to organize themselves into associations, an increasing amount of collective action was applied to social and economic affairs. A great expansion of government activity has been occurring in the communities, the States, and the Nation. The professions, like other phases of activity, have been affected by this development.

General evolution of the professions.—The earliest professions had their origin in the church. That was natural in a society that was dominated by the church and ecclesiastical organization. Later, with the organization of the guilds in the Middle Ages and the secularization of many activities, most of the professions became secular in outlook and organization. In at least one instance, however, in engineering, the origin appears to have been in service to the state, for engineering (civil engineering) came out of military engineering, which constructed the military roads and the engines of war.

Most of the professions, as they evolved in modern times, began with the efforts of individuals to meet certain needs by means of new techniques. They were private in origin. This evolution accords with the free enterprise system. In the progress of a profession, however, there comes a time when it begins to have some relationships with the State. These relationships vary with the professions, and they take different forms.

State regulation.—A number of the professions are regulated by the State. This matter is discussed in a section on licensure.

Employment.—The State employs a large number of professional personnel. Many of these are engaged in civilian activities of the Federal Government. In addition, the Federal Government has thousands of professional personnel—physicians, dentists, engineers, and others—in the Armed Forces. Furthermore, the branches of the Armed Forces have many thousands of commissioned line officers, all of whom may well be regarded as professional personnel. The States and their municipalities employ large numbers of professional personnel, many of them on a full-time basis. In employing these persons the Federal Government and the States help set and enforce professional standards.

Most of these employees advise and assist the Government in carrying out its purposes. The public prosecutor, for example, serves the State by bringing offenders of the law to justice. Numerous technicians and members of professions render many other public services, such as inspecting food, eradicating certain diseases, designing public structures and highways, developing new plants, and managing the national forests. Individual citizens are affected by these activities only in the indirect sense that all governmental activities serve the community at large.

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[9] See Dael Wolfle, *America's Resources of Specialized Talent*, ch. V. New York, Harper & Bros., 1954.

One may distinguish another form of State employment of professional personnel in which they give direct service to individuals. The public schools provide a good example. In earlier times heads of families and individuals paid teachers direct, usually in the form of fees, to educate their children. Today a limited number of teachers still gain their livelihood through such an arrangement, but by far the great majority in elementary and secondary education and a sizable proportion of those in higher education are employed by the State and its agencies to render service to individuals, partly to improve the State and its work, but largely to advance the welfare of the individuals.

Such employment of professional personnel usually fills a gap left by the failure of private practice to provide services for all who need them. The history of public education in the United States furnishes clear evidence on this point. The public schools were established because that was the only way to provide for universal education. Whether further development of this type will occur cannot be answered at present. Recently there has been much public discussion of methods of paying for medical services, but it seems to have subsided, at least for the moment.

Government influence on number and quality.—Governmental action has been taken in many ways to influence the number and quality of certain types of specialized personnel. The largest of these efforts has been the building and maintenance of facilities for education such as State universities and land-grant and municipal colleges and universities, in which about half of the Nation's supply of specialized personnel are educated. Other training facilities are maintained by the Federal Government for this purpose. State and Federal Governments have also provided scholarships, fellowships, and other financial aids and inducements to students who prepare for professional service.

Until recently there has been little or no disposition to plan for the overall development of professional personnel. This practice is, of course, in keeping with the laissez-faire ways of the Nation. It has seemed to be the best practice in a free country How long it can continue without established national goals is not certain.

Research.—The Government exerts a strong influence on the professions through its support o research, now running into large sums of money The research grants provide employment and trai ing for a sizable number of professional perso The findings of research become the substance o which the professions are nourished. One need onl to refer to the money spent by the Government o research in atomic energy, health problems, an agriculture to realize the great influence the Government has in providing the professions with the mea to do their work. It may also be noted that th research supported by the Government is limited t certain specified fields; for many fields it makes litt or no provision, notably the social sciences. Thi situation may result in an inadequate developme of professional service.

Licensure

After the Revolution, laws were passed in som States requiring physicians to obtain licenses whic were issued by medical societies or by State examining boards. In a few decades a combination o factors, including a laissez-faire philosophy of soci organization, produced a reaction against the Sta license system, and by the time of the Civil W the States had given up regulations for entrance t the practice of medicine. Likewise attempts we made before the time of the Civil War to requi licensure for the practice of several other professio but they proved generally ineffective.

Soon after the Civil War, with the development o professional associations, public attitude on licensu changed. The associations succeeded in persuadin the State legislatures that in order to protect th public against incompetent and unscrupulous pra titioners the State should issue a stamp of approv in the nature of a license to those who were qualifie to practice a given profession. Usually, boar were established, with the members appointed b the governor, to determine who met the qualific tions for a license.

The initial licensing act usually provided f licensing without question those who had practic in the State previous to enactment of the la Thereafter, all desiring licenses were required to graduates of professional schools or to pass a tec nical examination. Corruption often appeared the professional colleges in the form of sell diplomas, which led to the repeal of the diploma privilege and a dependence upon the examination as a means of determining competence for practice. This entire dependence upon the examination proved unsatisfactory, and soon applicants for examination were required to be graduates of approved schools. From time to time the educational requirements were increased as professional practice and the educational programs were improved.

The law providing for licensure of a profession is usually known as the professional practice act. In addition to making provision for licensing the profession, it sets up requirements for practice and authorizes the revocation of a license for violation of the law.

Many professional practice acts provide for granting courtesy licenses to recognized practitioners from States maintaining licensing standards equal to those of the State which the practitioner desires to enter. Under this arrangement, which is known as "reciprocity," licenses may be issued without examination of applicants from other States or with only partial examinations.

The license to practice a profession is different from a license to carry on a business. The professional license serves as a public declaration of ability to render professional service, and it is issued for the safety of the public and the protection of the public welfare. The business license, in contrast, is often primarily a means of taxation. The licenses of tradesmen usually attempt to insure integrity and are required as an aid to the police, without guaranteeing a degree of technical ability. Professional licenses are, of course, a means of protecting the competent and scrupulous practitioner from the competition of the incompetent and the unscrupulous, and in so doing they make it possible to improve professional service. They may be used, however, to create monopolies that operate against the public welfare.

Civic Relationships

Professionalism is not without serious social consequences. The trend toward highly specialized vocations tends to produce cleavages in society with a resultant lack of unity and concern for the affairs of society as a whole. Moreover, the professions tend to draw into them a large share of the intellectually more capable people. In these fields the professional activities almost completely engage the time and energy of the practitioners. It is but natural, therefore, that the members of the professions tend to lose concern with the broad field of public affairs except as their own immediate interests may be involved.

It may be admitted that the management of social and civic institutions and the administration of public affairs have become, at least partly, specialized and professional functions, which require special training, but it must also be said that the major decisions in these matters in a democratic society are made not by the specialist but by individuals who represent the public interest. That is the tradition which has been fostered in America from its beginning. There is no leisure class which is its governing class. Such a system of determining policy and getting things done cannot operate without leadership; in such a social order there must be leading citizens.

The professional man is a leading citizen. As one to whom society has given much by way of education, opportunity, prestige, and honor, he owes a special obligation as a citizen leader. The smaller and the larger communities turn to those of their members who carry heavy responsibilities in business and professional life to lead them in the conduct of their social and civic life. These men are expected to serve on municipal councils and boards and in other governmental and elective offices. They have places in such voluntary bodies as community chest boards, health councils, boards of cooperatives, church boards, and public improvement and planning committees, all of which are devoted to promoting the public welfare.

The needs of the community and the Nation are not always fully served by the educated members of society. Arthur T. Vanderbilt, Chief Justice of the Supreme Court of the State of New Jersey, several years ago commented on this matter in the following language:

"After 27 years of active participation in politics, most of that time as the leader of the majority party in one of the largest counties in the Nation, I venture to express the conviction that one of the greatest causes of the sickness of society is the aversion of its natural leaders, among whom I include its professional men, to performing their obvious duties as citizens." [10]

These wider relationships and concerns of the professions have in late years been a subject of widespread discussion. They are reflected in the tendency to increase the general education requirements of men and women who desire to enter professional schools.

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[10] *Education for Professional Responsibility.* Pittsburgh, Pa., Carnegie Institute of Technology, 1948. p. 151.

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2. Professional Education in the United States

PROFESSIONAL EDUCATION, broadly speaking, includes all that education which prepares for professional calling or employment. It may be differentiated on the one hand from vocational education, which relates to those employments not generally recognized as professions, and on the other hand from general and liberal education which has no specific practical application in view. However, as liberal education is organized in the colleges and universities it includes some specialization in particular fields of study which is partly aimed at assisting the graduate to gain a livelihood. Indeed, many colleges of liberal arts adapt their programs to provide education in such professional fields as business administration, home economics, journalism, and teaching.

It should also be noted that students in the graduate schools engage in highly specialized study in particular fields in which they will later earn their living. There is ample justification, therefore, for regarding the graduate school as a professional school; perhaps it should be thought of as an undifferentiated professional school, since it offers preparation for a number of fields of work.

Functions of the Schools for the Professions

The establishment of schools by and for the professions marks for them a distinct advance. The professions must continually renew their personnel. They have to conserve, transmit, and extend their accumulated experience, and they must insure its continuing and increasingly competent application to social purposes. These things are accomplished in large part through the help of the schools for the professions.

As the schools for the professions are developed they come to perform several significant functions. The first and perhaps most obvious of these, stated broadly, is (1) To recruit for professional training sufficient numbers of capable persons to man the professions; (2) to train and develop those recruits to an approved scientific, technical, and professional competence; and (3) to graduate those who possess the knowledge, technical abilities, personal character, and social outlook required for the practice of the professions.

The significant role of the professional school is emphasized by the fact that it is today the only gateway to a profession. In performing this function it renders a signal service to the profession and the public. The professional school collects from a wide variety of sources a wealth of facts, ideas, principles, and technical procedures appropriate to its field. These it organizes systematically with a view to their application in professional service and their mastery by students. It unites in a curriculum a group of subjects which are intended to develop the intellectual comprehension, the practical skill, and the professional attitudes a student of the profession must acquire. In following the rigorous regimen prescribed for him, the student learns to think like the members of his profession, he masters its techniques, he takes on its modes of behavior.

As the student proceeds through his course of professional study the school is obliged to determine from time to time whether his progress is such as to merit continued confidence in him to become a competent and trustworthy practitioner. Finally, the school must decide whether to graduate the student and thus send him out with a stamp of approval, in the form of a degree, as evidence that he will serve the public competently, honorably, and in accordance with the standards and ethics of the profession. Thus, the schools for the professions, through selecting, training, screening, and graduating those who aspire to professional practice, become the principal safeguards of the public against incompetent and unscrupulous practitioners. Their moral responsibility in this matter is clear. To graduate incapable and untrustworthy men and women would betray a public trust and render the professions and the public a great disservice.

The functions of the professional school are, more and more, being extended beyond that of providing the initial training of professional personnel. Many of the schools offer graduate education for those who wish to pursue their formal study beyond the first professional degree. Some offer what is appropriately called "continuing education," thereby providing opportunity for practitioners to renew their contact with the organized knowledge in their fields and to keep abreast of new developments. A goodly number of professional schools engage in research and thus make original contributions to scientific and professional knowledge. The collection, organization, and interpretation of knowledge for instructional purposes, together with the development of new knowledge through research, lead to the production of a sizable body of scientific and professional literature by professional schools.

The professional school is then a center of light and learning whose inspiration reaches the farthest recesses of the profession; it holds aloft the highest professional standards, continually infuses the profession with a fresh dynamic, and constantly renews its personnel.

How Many Should Be Trained for the Professions

In the preceding chapter reference was made to the demand for and the supply of professional personnel. Consideration of this matter raises several questions, such as: (1) How many students should be trained for the professions? and (2) how can a satisfactory distribution of students be had among the various specialized fields and professions?

An adequate answer to the first of these questions is not easily given. In a number of specialized and professional fields, projections of manpower demand are being made on a limited scale, but methods for doing this are in their infancy. Such forecasting is a complex process which involves consideration of many variable factors; there is urgent need to develop improved methods to do it well.

Although the demand for professional services in the future cannot be forecast precisely, there is reason to believe that it will increase markedly. The current prospect is that there will be a rapidly rising college and university enrollment in the near future which means that greatly increased numbers of men and women will prepare for the professions.

In late years some students of the demand and supply problem of professional personnel have become concerned that the professional schools may train more personnel than will be required. Walter M. Kotschnig, writing in 1937, expressed a fear that the opportunities for the employment of professional personnel would not be sufficient for the number of trained persons desiring them.[1] No doubt his thinking was deeply influenced by the state of affairs during the depression years of the 1930's, but he saw the problem as a long continuing one. He called attention in particular to the situation in European countries preceding World War II where the frustration of the intelligentsia incident to lack of employment in keeping with their training was a factor in the rise of European political discontent and revolt.

More recently Seymour E. Harris gave the academic world a severe jolt.[2] After a study of the trends of population, number of college graduates, and the national income, he concluded that by 196 there would be a vast excess of college graduates over the opportunities for work in their specialized fields. Although he recognized that there was a large deficiency of personnel in some professions, he held that the supply would soon catch up with the demand. Harris' forebodings have not been borne out in recent years, in part because events during the past few years have resulted in greater demands than could be anticipated in 1949, but they should be taken into account in any consideration of the number of professional personnel that should be trained in the future.

The second question posed above—how a satisfactory distribution of students can be had among the professions—is related to the American way of life as well as to the need for professional service. The right of each individual to choose his career is deeply imbedded in the Nation's long tradition of freedom. Such freedom inevitably results in maladjustments among the professions, some having a surplus while others have a deficit of personnel. Certainly the better paying and more glamorous professions usually experience little difficulty in attracting students, while those in which the salaries and working conditions are less favorable do not draw to themselves sufficient numbers. Advisory services for students, now being developed on a large scale, help in part to overcome some of the imbalances by assisting students to take into account the demand-supply factor as well as other points they often overlook in choosing their professions.

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[1] *Employment in the Learned Professions: An International Study of Occupational and Educational Planning.* London: Humphrey Milford, Oxford University Press, 937. p. 158-72.

[2] Seymour Harris. *The Market for College Graduates and Related Aspects of Education and Income.* Cambridge, Mass., Harvard University Press, 1949.

General Development

During the colonial period of American history nine colleges were founded, but in all of these except the one in Philadelphia the religious purpose was dominant; their principal objective was to train a body of learned ministers. The first professional instruction, other than in theology, which they provided was in medicine, that subject being offered at the College, Academy, and Charitable School of Philadelphia (now University of Pennsylvania) as early as 1765; at King's College (now Columbia University) in 1767; at Harvard University in 1782; and at Dartmouth College in 1798. It is reported that of the 3,000 physicians in practice in the United States at the close of the American Revolution only 51 had taken degrees in America, and fewer than 350 anywhere else. During the later colonial period and the Revolutionary era sporadic attempts were made in several colleges to maintain instruction in law, but these feeble beginnings were born out of time and came to nothing.

Preparation for the practice of the professions, other than the ministry, was generally had through apprenticeship, or preceptorship. The young man desiring to learn the profession associated himself with a practitioner who became his preceptor. By reading and by observing and assisting the preceptor in his practice the young man acquired the knowledge and skill which eventually enabled him to set up in practice for himself. There were no standards which the neophyte was required to attain. Even after schools were established for education in the professions the apprenticeship route for learning the professions remained open for a long time, and not until the early part of the 20th century was it abandoned entirely.

In the post-Revolutionary period some professions other than medicine began to establish schools. The first law school in the United States was a private venture which a judge in Litchfield, Conn., conducted in his office from 1784 to 1833. Over a thousand young men attended it. The first permanent instruction in law by the universities came with the establishment of the law faculty of the University of Maryland in 1816, the opening of the law school at Harvard University in 1817, the adoption of a private law school by Yale University in 1824, and the opening of the law school at the University of Virginia in 1826.

In the field of technology the first professional school to be established in the United States was the United States Military Academy at West Point (1802), but the first civilian institution was the Rensselaer School founded in Troy, N. Y., 1824. Later the name was changed to the Rensselaer Polytechnic Institute. It has been of inestimable importance in the development of the Nation.

Institutional instruction in some other professional fields was also begun before the Civil War. A school for instruction in pharmacy as a supplement to apprenticeship was established in Philadelphia by the Philadelphia College of Pharmacy (an association of pharmacists) in 1821 and the Baltimore College of Dental Surgery was opened in 1840.

The period following the Civil War saw a rapid increase in professional schools. Many of these were proprietary institutions operated for the owners' profit and frequently on a low educational plane. The universities took increasing interest in professional education and either established professional schools or absorbed schools already established. Some of these university endeavors were on a high plane, but others were little better than the proprietary schools. In general it can be said that, with some notable exceptions, education for the professions near the close of the 19th century was in a sad state. Most of the professional schools were wretchedly housed and almost never in quarters designed for the needs of professional instruction. Their only income was from student fees, which covered the costs of operation and provided a profit for the owners. The entrance requirements were few and low. The majority of the students could not have been admitted to colleges requiring entrance tests. The courses were almost entirely didactic.

A marked turn for the better came early in the 20th century, and the last 50 years have witnessed a truly remarkable development in professional education. A number of factors were responsible, among them the development of industry and communication, the urbanization of the population, the great increase in wealth, the development of higher education in general with special attention to graduate education and research, and the organization of educational and professional interests in national associations. The increasing public demand for professional services and the presence of sufficient wealth to pay for the services have made a place for a large number of professional personnel. The flood of knowledge and the invention of new techniques have given the professional schools an extensive body of content for instruction, and the large philanthropic and public support has provided the facilities and sustained the costs of instruction and learning.

Educational Associations

The low state of professional education in the last quarter of the 19th century became a concern of some associations of professional practitioners, and they often devoted a good deal of attention to it. Frequently they took action that was intended to encourage the development of better schools.

Beginning in the last quarter of the 19th century, associations of professional schools were formed. As a means of improving education in their respective fields they usually adopted standards and admitted to membership only those schools whose practices conformed to the standards. Through such means and through discussions of educational problems in their meetings, these associations exerted a strong influence for improvement. Today there is a national association of the educational institutions in practically every field of professional education. The associations usually hold annual meetings at which educational matters are discussed, committee reports are made and adopted, and actions are taken on matters of concern to the schools. Some of the associations publish educational periodicals. A number of them have been instrumental in having surveys made of their fields, and most of them make studies relating to their work. Among the leading organizations are the American Association of Colleges for Teacher Education, the American Association of Colleges of Pharmacy, the American Association of Collegiate Schools of Business, the American Association of Dental Schools, the American Association of Theological Schools, the Association of American Law Schools, and the Association of American Medical Colleges.

Accreditation

A significant factor in the improvement of professional education has been the setting and enforcement of standards by various agencies. Mention has been made of the efforts of educational associations toward this end. Sometimes associations of professional practitioners established standards for their professional schools and classified the schools in relation to how they met the standards.

The practice of setting up standards for educational institutions and according recognition to institutions which conform to the standards is known as accreditation. It is now used in all forms of professional education.

The accrediting process in professional education is carried on by associations, by councils, by boards, and by committees. One of the earliest and most prominent accrediting agencies in professional education was the Council on Medical Education of the American Medical Association established in 1904. Other accrediting agencies include the American Bar Association, the American Council on Pharmaceutical Education, the Council on Dental Education of the American Dental Association, and the Engineers' Council for Professional Development.

Accreditation in professional education serves several useful purposes. It indicates to the public which institutions can be relied on as to the quality of their work. Such information is of considerable importance to young people who plan to pursue professional education. Accreditation enables professional examination boards to know which institutions provide satisfactory education for the candidates who apply for examinations for licenses. It facilitates interinstitutional relationships and becomes especially helpful in the transfer of students from one institution to another. The general effect is wholesome for it produces a standardization and improvement of education in a country which exercises only limited legal control over education.

In late years there has been much criticism of the accrediting agencies, which has emanated largely from the colleges, universities, and some individuals. It resulted in the establishment of the National Commission on Accrediting, which was organized in 1949 by representatives of five associations of colleges and universities. Since that time two other associations have joined the commission, whose purpose is to examine the practices of accrediting and the problems related to this function.

Educational Surveys

The survey is a means that has been widely used to stimulate improvement in education for the professions. It is a research procedure that is applied in studying a system of education or an institution of education for the purpose of evaluating the service and proposing alterations or extensions by which the service may be improved.

The educational survey was developed in the early years of the present century, and it was soon widely applied to all levels of education. The first noteworthy application in professional education occurred in 1908–10 when Abraham Flexner under the auspices of the Carnegie Foundation fo the Advancement of Teaching, conducted a survey of medical education in the United States and Canada. A few years later (1913) this foundation set up a Division of Educational Enquiry to conduct studies and make investigations concerning educational systems and institutions, and it soon initiated national studies of legal and engineering education. At a later date the foundation made studies of dental education and teacher education, and additional studies of legal education. Since 1928 the foundation has made no surveys of professional education, although it has received requests from a number of professional groups for them.

The United States Office of Education after 1915 made numerous surveys of higher education institutions and a nationwide survey of the education of teachers reported in 1934. This survey was supported by an appropriation made by Congress. The Office has not engaged in other surveys of professional education except as individual staff members may have participated in them occasionally.

More recently associations of professional schools, associations of professional practitioners, or accrediting agencies in professional education have made surveys of their institutions and programs of professional education, usually with the assistance of grants from foundations. Examples are found in architecture, dentistry, engineering, law, library service, nursing, teaching, theology, and other fields, as indicated in later chapters of this book. Some of the surveys have been comprehensive studies of particular professions, including education for those professions; others have been largely limited to education. Foundations which have provided funds for surveys include the Carnegie Corporation of New York, the Commonwealth Fund, the American Foundation for Pharmaceutical Education, and the W. K. Kellogg Foundation.

The surveys usually make an inventory and an appraisal of the situation and present recommendations and suggestions for improving the education that is offered. When the survey is conducted by competent surveyors, it usually becomes a landmark in the history of education in the particular field. It provides a basis for self-criticism and evaluation by the professional schools, informs the profession about the status and service of its educational institutions, and sometimes establishes new ideals and goals for cooperative action through the association concerned with the particular field.

Admission to Professional Schools

The selection of personnel and its admission to the professions are largely in the hands of the professional colleges and schools for the simple reason that, practically without exception, the only way of entering a profession is through a course of specialized education in a college or a university. By admitting, screening, and graduating students the professional colleges and schools, to a large extent, decide how many professional people the country will have, what kinds of persons will constitute the future members of the professions, and what their intellectual, civic, and professional accomplishments will be.

Some years ago the selection of applicants to be educated for the professions presented, in general, no difficult problems, for the places in many of the professional schools were not all occupied. When a young man knocked at the doors of a school the authorities examined his credentials to see whether he met the established minimum requirements, which were frequently quite low. The principal problem in many instances was to interpret the so-called "equivalents" presented by applicants whose education varied from the usual or stated pattern. In general, all who measured up to the minimum requirement were welcomed, provided, of course, they could pay the fees. Indeed the problem was not so much one of selection as it was of sending emissaries into the highways and byways to gather in those who could be induced to prepare for professional service.

In late years this situation has changed greatly. About 1920 the number seeking admission to the medical schools began to exceed the number that could be admitted. Such situations had already arisen in some of the schools, but until 1920 there were always places in other schools to which qualified applicants could go. In education for other professions a similar change occurred, with the result that in a number of them only a part of the qualified applicants could be accommodated.

The professional schools, particularly in some fields, were then confronted with a difficult problem: How to select the best applicants. Frequently the responsibility was placed in the hands of a committee which developed sets of criteria and decided which applicants would be accepted. Psychologists were called upon for assistance, and they produced a number of predictive tests, scales, and inventories, some of which are widely used. One of the most useful summaries of these efforts is a volume entitled

Predicting Success in Professional Schools by Dewey B. Stuit *and* Others.[2]

Consideration of admission to professional schools involves taking into account certain economic barriers that stand in the way of men and women who possess the capacity for education. The principal one of these is economic; low family income, together with the very high cost of some forms of professional education, keeps many persons with superior minds from entering the professions, and therefore the places are taken by others of lesser capacity. So serious is this barrier to some professions that they, it is stated, tend to be open only to the well-to-do. Currently little financial assistance is available to students in professional schools. Among other barriers which in varying degrees deny men and women freedom of choice to prepare for the professions are the lack of enough schools, race, national origin, and sex.

Patterns of Professional Education

Each profession has developed its own pattern of professional education. These patterns are continually changing, principally by increasing the subjects of study and lengthening the period required to complete the education.

General development.—When the first professional schools were established in the United States the courses of study usually consisted of a few courses of lectures which covered a period of a few months. As the programs were lengthened to 2 years it was not unusual to repeat the same lectures for the second year. Very little was demanded by way of admission requirements. Over the years, as the high schools became widespread, it became customary to require some high school education and eventually the completion of an approved 4-year high school for entrance. During the same time some of the professional school curriculums were expanded to 3 years and later to 4, and the instruction was graded, the work of each year being built upon that which the student had already done. The earlier curriculums emphasized technical and clinical study. Slowly, as the sciences were developed, these subjects assumed greater importance in the curriculums, with the result that professional education was largely transformed by placing it on a scientific foundation.

Four-year programs.—Currently a pattern of education for certain professions in the United States consists of a 4-year curriculum in a profession school to which a student is admitted upon gradua tion from high school and which ends with th attainment of the bachelor's degree. Some of the curriculums consist almost entirely of technical an clinical (or practice) subjects with related scienc while other curriculums also include a fair proportio of more general subjects aimed primarily at broade ing the student's outlook and understanding.

Fields in which 4-year programs prevail generally are accountancy, agriculture, business administra tion, education (preparation of teachers for elemen tary and secondary schools), engineering, fine art forestry, home economics, journalism, nursing (pro grams in colleges and universities), and pharmacy In at least two of these fields—engineering an pharmacy—a considerable number of schools hav 5-year programs; in pharmacy there is a nationwid movement in that direction.

Longer programs.—There is a distinct tendency t raise the educational level of professional curricu lums by requiring for admission the completion of stated number of years of study in a college of libera arts and sciences. It is now possible to exact such requirement because a large number of young peopl attend college. In a few fields professional educa tion is available only to applicants holding bachelor degrees in the liberal arts and sciences. (See table 2)

Table 2.—Plans of education in 13 professional fields cover 5 or more years [1]

Field	College education (years)	Professional curriculum (years)
Medicine	3	
Theology	4	
Dentistry	2	
Hospital administration	4	
Law	3	
Osteopathy	2	
Social work	4	
Veterinary medicine	2	
Architecture	0	
Chiropody	1	
Library science	4	
Optometry [2]	1	
Public health	4	

[1] The plan most commonly followed in each field is indicated; in every fi some schools vary from the plan.

[2] Some schools operate on a 2-3 plan.

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[2] Published by the American Council on Education, Washington, D. C., 1949.

Beyond the professional curriculum leading to the first professional degree graduate study is available in many fields. It leads to a master's or second professional degree and to a doctor's degree, the most common of which is the doctor of philosophy. Graduate study, which includes research, prepares for research work, for teaching, and for practicing a specialty of a profession.

Enrollments

Enrollments in professional schools run into several hundred thousand. (See table 3.) The available data are reasonably accurate and complete for some professional fields, but for others they are only approximate.[4] The figures should therefore be read with care and discrimination.

Several observations may be made regarding the enrollments in table 3. By far the largest numbers of students in courses leading to first professional degrees are found in engineering and business administration. Eight other fields whose enrollments run over 10,000 are law, agriculture, medicine, home economics, theology, pharmacy, dentistry, and architecture.

The professional field which by far the largest number of college and university graduates enter is that of teaching in the elementary and secondary schools. Unfortunately no enrollment data now available indicate the number of students who are preparing for such professional service. Enrollments in teachers colleges and schools of education are available, but they by no means include all who expect to become teachers. Moreover, these enrollments include a considerable number who are not preparing to teach.

In all but a few professional fields there are graduate students—students pursuing courses leading to graduate degrees. The largest numbers are found in engineering, business administration, agriculture, medicine, and theology.

Degrees Conferred

The number of earned degrees, undergraduate and graduate, conferred in professional fields in 1952–53 came to 244,920, which was about 64 percent of all the degrees conferred by the colleges and universities. (See tables 4a and 4b.)

Table 3.—Enrollments in professional colleges and schools (fall of 1953 unless otherwise indicated)

Professional field	In courses leading to first professional degrees		In courses leading to graduate degrees	
	Number of schools	Enrollment	Number of schools	Enrollment
Agriculture	118	33, 163	52	4, 919
Architecture*	64	11, 148	29	205
Business administration	382	171, 222	117	13, 302
Chiropody*	6	725	6	23
Dentistry*	43	12, 516	26	332
Engineering	210	171, 725	126	21, 608
Forestry (1953–54)*	24	4, 359	24	479
Home economics	232	26, 064	69	1, 118
Hospital administration	13	219	--------	--------
Journalism*	84	4, 508	35	601
Law[4]	167	[1] 37, 620	53	1, 719
Library service	45	2, 712	--------	(²)
Medicine (1953–54)*	76	28, 227	72	3, 913
Nursing (college and university only)	171	23, 024	16	1, 090
Occupational therapy*	27	[illegible]	--------	(²)
Optometry (1953–54)	12	1, 953	9	91
Osteopathy*	6	1, 902	--------	--------
Pharmacy (1953–54)*	75	15, 850	43	570
Physical therapy	37	1, 631	4	58
Public health*	4	227	10	771
Social work*	52	5, 497	15	69
Theology:				
Jewish (Spring 1953)	15	2, 450	--------	(²)
Protestant	149	18, 905	55	2, 010
Roman Catholic (1951–52)*	119	11, 128	--------	(²)
Veterinary medicine*	17	[illegible]	14	146

[1] Includes special and unclassified students.

[2] Not separately reported.

Sources: Enrollments in the fields marked (*) are from data compiled and published by organizations in the respective fields; as an example, enrollments in medicine are from the annual report on medical education made by the Council on Medical Education and Hospitals, American Medical Association; enrollments in fields not so marked have been compiled from reports made by the institutions to the Office of Education. Special and unclassified students are not included unless so indicated.

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[4] There are several reasons, which relate mostly to the data collected and compiled by the Office of Education. A few institutions fail to report enrollments; for such colleges and schools it is necessary to make estimates in order that the totals may take all institutions into account. Inasmuch as educational programs are differently organized in the various colleges and schools, the data reported are not always comparable in all respects. Enrollments in home economics serve as an example. Usually when the instruction in this field is organized in a college or school of home economics the enrollment reported will include students of this subject in all 4 years of the curriculum, but where it is organized in a department of a college of arts and sciences the enrollment reported usually includes only students in the junior and senior years who are pursuing majors in home economics. In some institutions students do not register in professional schools until they have completed approximately two years of college work; they may then pursue professional courses for two or more years.

Enrollment data published by the Office of Education are from the institutions listed in the *Education Directory, Part 3—Higher Education*, published annually by the Office. This directory lists only institutions that meet certain criteria. Hospital nursing schools, which train most of the professional nurses, are not listed in this directory. Likewise large numbers of music schools which are not units of colleges or universities are not listed.

Table 4a.—Earned degrees in professional fields conferred by colleges and universities, 1952–53[1]

Field of study	First professional degrees			Graduate degrees	Total
	Male	Female	Total		
Accounting	7,068	303	7,371	578	7,949
Agriculture	7,648	151	7,799	1,792	9,591
Architecture	1,937	108	2,045	197	2,242
Business administration	28,363	4,972	33,335	3,566	36,901
Dentistry, D. D. S. only	2,920	15	2,935	------	2,935
Dental sciences	401	109	510	96	606
Engineering	24,152	37	24,189	4,084	28,273
Forestry	1,026	------	1,026	151	1,177
Home economics	28	7,489	7,517	655	8,172
Journalism	1,680	855	2,535	281	2,816
Law	10,923	406	11,329	502	11,831
Library science	98	509	607	1,038	1,645
Medicine, M. D. only	6,326	360	6,686	------	6,686
Medical sciences, n. e. c.[2]	2,272	795	3,067	427	3,494
Music	2,665	3,881	6,546	1,755	8,301
Nursing	43	4,328	4,371	477	4,848
Optometry	871	11	882	100	982
Osteopathy	451	10	461	2	463
Pharmacy	3,696	404	4,100	184	4,284
Public administration	282	27	309	271	580
Public health	92	128	220	658	878
Social work	324	595	919	1,821	2,740
Teaching	21,026	40,494	61,520	28,184	89,704
Theology	4,316	184	4,500	740	5,240
Veterinary medicine	872	6	878	38	916
Military or Naval science	1,666	------	1,666	------	1,666
Total	131,146	66,177	197,323	47,597	244,920
Degrees conferred in all fields	200,820	104,037	304,857	69,332	374,189

Footnotes follow table 4b.

Regional Arrangements

Education for most of the professions is very expensive, and not all States can afford to maintain schools in all professional fields. Moreover, the demand for personnel in some professions is so small as not to warrant the expense of a school for each profession in each State. This situation has led to regional arrangements under which a State not having a college or school for a particular profession sends its citizens to another State where such a college or school is maintained. The State sending its citizens to an outside institution makes a contribu-

Table 4b.—Earned degrees in professional fields conferred b colleges and universities, 1953–54[1]

Field of study	First professional degrees			Graduate degrees	Total
	Male	Female	Total		
Accounting	7,021	440	7,461	551	8,012
Agriculture	5,611	114	5,725	1,456	7,18
Architecture	1,531	92	1,623	161	1,78
Business administration	28,234	5,249	33,483	2,681	36,16
Dentistry, D. D. S. only	3,063	39	3,102	------	3,102
Dental sciences	248	175	423	109	532
Engineering	22,264	65	22,329	4,798	27,127
Forestry	902	2	904	157	1,061
Home economics	81	7,386	7,467	615	8,082
Journalism	1,495	749	2,244	248	2,492
Law (LL. B. or higher degree)	8,976	322	9,298	372	9,670
Library science	364	1,232	1,596	134	1,730
Medical sciences, n. e. c.[2]	1,120	1,077	2,197	424	2,621
Medicine, M. D. only	6,414	343	6,757	------	6,757
Music	2,545	3,694	6,239	1,650	7,889
Nursing	62	5,047	5,109	484	5,593
Optometry	686	20	706	3	709
Osteopathy	439	10	449	4	453
Pharmacy	3,542	343	3,885	222	4,107
Public administration	351	32	383	328	711
Public health	91	94	185	484	669
Social work	744	1,419	2,163	191	2,354
Teaching[3]	9,837	37,546	47,383	27,463	74,846
Theology	4,344	119	4,463	826	5,289
Veterinary medicine (D. V. M. or higher degree)	793	10	803	24	827
Military or naval science	1,842	1	1,843	------	1,843
Total	112,600	65,620	178,220	43,385	221,605
Degrees conferred in all fields	187,500	105,380	292,880	65,819	358,699

[1] Includes degrees conferred in Alaska, Hawaii, and Puerto Rico.

[2] n. e. c. means "not elsewhere classified."

[3] Students in secondary education generally major in particular subjects, such as English, history, mathematics, etc., at the same time they are preparing to teach. In the current survey, when (as occurs especially in teachers colleges) all or nearly all degrees in an institution were reported under "Education" an attempt was made through correspondence with the institution to distribute such degrees according to the major field of specialization.

Source: *Earned Degrees Conferred by Higher Educational Institutions, 1952–1953* and *1953–54*. Office of Education, Circulars Nos. 380 and 418. Data contained in the table may be at variance with data included in subsequent chapters which were collected by various organizations. From the data, such as those for library science, public health, and social work, it would appear that at least some of the first professional degrees are reported as graduate degrees. In these fields, a bachelor's degree is usually a requirement for entrance to the professional school.

tion to that institution for each student it sends there.

The first regional arrangement established on a large scale for higher education was instituted in the Southern States in 1948. A total of 14 States participated in the plan which is administered by the Southern Regional Education Board with headquarters in Atlanta, Georgia. The board operates under a compact which authorizes it to enter into agreements with States, educational institutions, and other agencies to provide adequate services and facilities in graduate, professional, and technical education. Although the board is authorized by the compact to establish new institutions to meet the region's higher education needs, it has worked only through existing institutions.

The board carries on contract programs in medicine, veterinary medicine, dentistry, and social work—fields in which student demand is large and the necessary educational facilities are rare and expensive. Under the plan, a State which desires to provide for the education of students in a field for which it lacks facilities contracts with the board to send to an institution possessing the facilities a quota of students certified as bona fide residents. The State agrees to pay a set amount per student to the receiving institution. The board then contracts with an institution, which agrees to receive the regional students on a resident basis provided they meet its admission requirements. The students pay the usual resident fees. About one and one-third million dollars pass annually from States to 19 institutions (1953–54) for somewhat more than 1,000 students.

Through memorandums of agreement the board cooperates with institutions in planning and developing advanced scientific and educational programs. In a less formal way it also cooperates with institutions and agencies in studying problems of regional concern or carrying out special regional projects.

Two other regions are developing similar cooperative plans. A compact has been drawn to include 11 Western States and the Territories of Alaska and Hawaii. It has been approved by the Congress and the President, and it has been entered into by 8 of the States. The administrative organization to carry out the compact is the Western Interstate Commission for Higher Education, which maintains an office at the University of Oregon, Eugene, Oregon.

A compact has also been drawn in New England, and it has been approved by the Congress and the President. It applies to the 6 New England States and becomes operative when 2 or more enter into it. The plan will be operated by the New England Board of Higher Education.

Succeeding Chapters

The succeeding chapters are devoted to education in particular professions. Those fields of education are selected for which schools or colleges are maintained in the universities. In one of the fields—accounting—the instruction is usually given in a department of a school of business administration, but the field of practice possesses to a marked degree the characteristics of a profession. In another field—public administration—the instruction in most institutions is organized in departments of political science, but in some institutions it is organized in a school.

The general plan of the chapters is to describe briefly the profession; to state the history, organization, and current status of education for the profession; and to indicate some of the current problems in the particular field of education. Lists of schools are given when the number is not too large. The selected references suggest sources of additional information.

Selected References

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Wills, Elbert Vaughan. *The Growth of American Higher Education: Liberal, Professional, and Technical.* Philadelphia, Pa., Dorrance & Company, 1936. 225 p.

For references on education for the various professions, see the succeeding chapters.

3. Education of Professional Accountants

By S. PAUL GARNER*

EDUCATION in accounting is widely available in a variety of institutions, but most of the students who plan professional careers in this field obtain their training through 4-year curriculums in colleges and universities. These institutions usually provide the training in their schools of commerce and business administration.

The Accounting Profession

The expression "professional accountants" has both a broad and a narrow meaning. In the broad sense it includes all persons engaged in accounting activities regardless of whether they are employed on a salary or fee basis by one or more organizations. While some have suggested that the broad meaning of the term be adopted as the popular one, many persons think of professional accounting as being synonymous with what is frequently called "independent public accounting." The discussion here will be limited to those aspects of professional accounting which are concerned with the narrow interpretation. In fact, the terms "professional accounting" and "public accounting" will be used interchangeably in this article.

Accountants do accounting work, but what is accounting? The following definition has been widely accepted: "Accounting is the art of recording, classifying, and summarizing in a significant manner and in terms of money, the actions and events which are, in part at least, of a financial character, and interpreting the results thereof."[1] Public accounting has been defined as the practice of the art accounting "by one whose services are available the public for compensation. It may consist of th performance of original work, in the examination a revision of the original work of others, or in th rendering of collateral services for which a knowledg of the art and experience in its practice create special fitness."

Public accounting as defined above has been co ducted in European countries on at least a limite scale for several centuries. It was well establishe as a profession in Great Britain by the 1850's, and while several dozen persons held themselves out a practitioners in this country in the 19th century most of the development in the United States ha taken place since 1900.

In public accounting the practitioner may perfor a variety of services for his clients. Although major part of his work consists of expressing an im partial, independent, and informed opinion regardin the fairness of the representations made in financi statements, a considerable portion of his service is the consultant variety, especially on matters internal control, taxation, and financial problem

Professional Accountants

There is no ready source of information on th number of practitioners engaged in public accoun ing. Statistical information is difficult to compil because in a majority of the States there is no leg restriction on the practice of public accounting b anyone who desires to open an office. This mea that many thousands of persons are engaged public accounting on a full-time or part-time basi who have not necessarily met the requisite qualific tions established by law in the minority of Stat which have regulatory legislation. If one desire however, to practice as a "certified public accoun ant" (CPA) he must satisfy all the provisions of th regulations and laws of the State in which he pra tices. While there may not be any essential differenc in the type or quality of work performed by a publ accountant as contrasted with a CPA, it is a mark of high professional esteem for a person to achieve the goal of being a CPA.

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[1] Committee on Terminology, American Institute of Accountants, *Bulletin* No. 1, 1953, p. 9.

New York enacted the first CPA law in 1896. It was not, however, until the early 1920's that all of the States had laws regarding the practice of public accounting as a CPA.

There are at present about 53,000 CPA's in the United States (several thousands of these are not in public practice), but more than 100,000 persons are engaged professionally in public accounting. This last figure includes staff employees. Both of these groups have increased markedly since 1940. For example, it is estimated that the number of CPA's increased about 50 percent from 1947 through 1953. Even with this large increase there is still a shortage of qualified personnel.

Professional Organizations and Periodicals

The profession of public accounting is well organized. At the State level there is in every case a society of CPA's which integrates the committee work of its members and in general conducts a timely public-relations program. In many States there are associations of noncertified public accountants which serve as focal points for the conduct of their professional activities.

At the national level the American Institute of Accountants has over the past 37 years energetically promoted the public's interest in the profession, engaged in research and educational work, and, perhaps most significantly, prepared and graded the Uniform CPA Examination. For the past 18 years, membership in the AIA has been restricted to CPA's; its members now number about 24,000.

The leading magazine in the field of public accounting is *The Journal of Accountancy*. It is published by the American Institute of Accountants and has a circulation of about 68,500 copies a month. Several of the State CPA societies also publish monthly or quarterly periodicals with substantial distribution.

Licensure and Certification

As mentioned above, a majority of the States place no restriction on the practice of public accounting by anyone except for CPA's. About 20 of the States, however, have what is called "regulatory legislation," which forbids the practice of public accounting by anyone who has not received a license or a certification of registration from the appropriate State examining board (this board is usually appointed by the governor of the State—in most cases only CPA's are eligible for appointment).

In regard to the practice of public accounting as a CPA, the States also differ to a considerable degree in their legal procedure. In some States, for example, the awarding of the CPA certificate carries with it a license to practice. In other States the CPA certificate is issued by one governmental board or the State university, while the license to practice is taken care of by another board. In the latter case a person could very well be a CPA without having the legal permit to practice his profession. To complicate matters further, in several of the States the CPA is referred to as a "degree" and the matter of licensure to practice is left vague.

Inasmuch as the various CPA examining boards have common problems, they organized several years ago the Association of Certified Public Accountant Examiners. One of the important and active committees of this association is called "Committee on Education and Experience Requirements." This committee has issued several interim reports. Thus far, the recommendations contained in the reports have been viewed as tentative.

All the States and Territories use the Uniform Examination prepared by the American Institute of Accountants to certify public accountants. The 4-part examination, customarily given twice each year, covers a period of 2½ days. The grading service of the institute is also available to the State examining boards on a fee basis. More than 40 of the boards have papers of the candidates graded in this manner.

Educational Preparation for the Profession

Until about the turn of the 20th century most persons who desired to enter a career in public accounting followed the apprenticeship system, which had been popular in Europe in earlier centuries. Formal education beyond the secondary school level was not considered a requisite until some time after World War I. The emphasis on apprenticeship is still prominent in England and other countries, even though some of their universities now offer courses in accounting. With the establishment of 4-year collegiate schools of business in the United States, starting with the Wharton School of Commerce and Finance at the University of Pennsylvania in 1881, attention was more and more given to the possibilities of furnishing persons who desired to enter public accounting with formal higher education. This development came slowly, and by

1900 only 7 colleges and universities offered organized curriculums in the field of accounting. By 1921 there were about 135 such colleges and universities. More current data are difficult to obtain because some institutions do not offer accounting majors as such, yet the same institutions graduate people who have taken a considerable amount of accounting, often sufficient for their purposes. Estimates on the number of institutions of higher education which now train people for accounting careers range from 200 to 250.

In addition to the regular 4-year collegiate institutions several score specialized schools conduct daytime and evening programs, and correspondence work, leading to certificates of educational proficiency in accounting. Furthermore, a number of junior colleges and institutions conducted by the YMCA and similar organizations offer programs in accounting. The principal difference between the regular collegiate schools of business administration and the other numerous training institutions and organizations is that the candidates for the usual bachelor's degree must follow a curriculum which calls for certain proportions of general education, general business training, and education in accounting. It is now widely recognized that a professional accountant must be a broad gaged person with an understanding of the society in which he lives as well as the business and economic environment. Curriculums which emphasize these phases of the young person's educational background are most likely to be found in the 4-year collegiate institutions. It is significant, however, that only two States thus far, New York and New Jersey, require a bachelor's degree before admitting the candidate to the CPA examination. More details are given in a later section on this phase of the education for the profession.

Surveys and Studies

Only sporadic efforts have been made in the past to determine just what type of educational background is most effective for the professional accountant, but committees of at least two of the major accounting associations have been active off and on for the past 25 years. Surveys have also been made by State societies of CPA's to sound out professional practitioners on their views on what types of courses should be studied by persons interested in a public accounting career. All of these studies and surveys have been generally inconclusive, and until recently few concrete data or considered opinions were available.

About 6 years ago the American Accounting Association[3] constituted a committee on standards rating which was charged with formulating a normal pattern of a desirable and feasible accounting curriculum. In its interim and final reports this committee did not differentiate in its recommendations and conclusions between students preparing for careers in public accounting and those preparing for careers in other accounting fields. Students would, by selecting appropriate courses, concentrate to a minor degree on either public or private accounting according to their choice. Specific details of the committee's recommendations are given in a subsequent section.

Another significant development with specia emphasis on public accounting was initiated in 195 when a group of 5 persons, following a suggestio made by a prominent partner of a national firm o CPA's, invited 20 other persons to serve with them on what was to be called "Commission on Standard of Education and Experience for the Practice o Public Accounting as a CPA." This group consist of members selected from the ranks of both larg and small public accounting firms, members of Stat CPA examining boards, deans of collegiate school of business, professors of accounting from some o the major institutions, and representatives of Stat education departments. While the work of thi commission has been moving forward expeditiousl with a study director in charge, nothing tangible ha been forthcoming thus far.

Accreditation

Programs of accreditation of professional accoun ing education have not made much progress. Th 76 collegiate schools of business administratio which are members of the American Association Collegiate Schools of Business, are expected adhere to certain quite carefully devised standard of curriculums and staff. (These standards appl to the entire program in business administration- not just to accounting.) Beyond this there has bee no accreditation of professional education in accoun ing other than that by the regional general accredi ing agencies, such as the Southern Association Colleges and Secondary Schools, which accredit t entire institution rather than professional schools fields of study. This means in essence that any college so desiring may establish a program in accounting without meeting any professional standards of instruction, curriculums, or staff. This matter, in the past, has not been too important from the standpoint of licensure because only a limited number of States require higher education as a requisite for the CPA certificate, or to practice public accounting in any way.

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[3] The AAA membership of 5,100 is divided as follows: About 45 perc teachers and professors of accounting and about 55 percent public and priv practitioners.

Both New York and New Jersey (the States which require the bachelor's degree) have published registers of approved schools. These registers are compiled from information furnished by schools which desire to be listed on the register. The questionnaires ask pertinent questions on (1) the amount of accounting work required of all students majoring in accounting, (2) the amount of liberal arts work required, (3) the required work in other fields of business administration, (4) the number of staff people teaching accounting, and (5) the financial resources of the institution and library. Even though certain minima are specified, this procedure should not be regarded as accreditation. The professional organizations have not entered extensively into this aspect of administering the educational programs in accounting.

Schools and Enrollments

As mentioned previously, professional accounting education is conducted in a variety of types of institutions. To complicate the picture further, most of these institutions train people for careers in more than one phase of accounting. Almost no institutions, especially 4-year colleges and universities, stress publicly that they are primarily engaged in the training of people just for public accounting. The more general academic philosophy is that the school of business administration has a broad educational objective and that accounting is only one of the dozen or so areas of moderate specialization possible in the undergraduate program.

Many 1-year and 2-year institutions, operating principally in the larger cities, offer courses in the evening for people already in the public accounting field as well as for those who contemplate entering that field. Many of these institutions do a noteworthy job, and in past years have furnished the academic training for a considerable percentage of the number of persons entering public accounting. In more recent years, however, the feeling is becoming rather general that persons entering public accounting should have as a minimum the usual 4-year program in an accredited school of business administration, supplemented by graduate work if possible. Indeed, many of the larger firms of CPA's and some smaller ones have announced that they will not normally employ beginning staff personnel who have not been graduated from an accredited school of business, preferably with a major in accounting. Statistics on persons passing the CPA examination also indicate that graduates of accredited universities have a much higher chance of success on the examination.

Enrollment data on persons registered in all types of schools offering courses in accounting are not available, but some indication of the number of students in this field may be had from the number of earned degrees in accounting conferred in recent years. (See table 5).

Admission Requirements

Depending upon the type of institution, the admission requirements vary a great deal. For example, the 1- or 2-year evening-school programs may require only an interest in the subject matter as a preliminary to enrollment. Both the accredited 4-year schools of business and the nonaccredited 4-year programs have the usual precollege preparatory work requirements. These requirements are the same regardless of the possible interest of the student as to his major in the field of business administration. For example, if preparatory school algebra is required for entrance to the school of business administration it would be required for students who plan to be accountants as well as those who hope to be salesmen, factory superintendents, bankers, and statisticians. Until separate schools of accounting are organized within the framework of the university administration, admission requirements for education in accounting per se will not be an important issue to the 4-year business schools.

Professional Curriculum

It has previously been noted that there is a considerable disparity between the various 4-year schools as to the percentage of student time devoted to the various phases of his training needs. Among accredited schools, however, there is more uniformity, even though the percentages vary even here to some extent. A close analysis of the 4-year nonaccredited schools revealed a wide disparity. Some of the institutions, for example, permit the student to take as much as 70 to 75 percent of his work in studies related to business and accounting.

Among the 1- and 2-year institutions it is not possible to develop any consensus, since they range from those institutions that permit all of the work to be taken in accounting to those which, for example, permit only half of the work to be taken in this subject.

Just recently, the American Accounting Association's Committee on Standards Rating issued its final report, after 5 years of study and effort. Although the entire report is of major interest to persons concerned with the professional education of public accountants, reference can be made here only to the standards relating to the undergraduate curriculum.[8] The familiar 4-year academic program of undergraduate university education is retained. The curriculum is designed to accomplish three objectives: (1) Training in citizenship; (2) training in the broader aspects of business; and (3) equipping the student with necessary proficiency and knowledge of accountancy. The committee recommends that the 4-year college program be divided as follows: (1) Liberal, cultural, and general nonbusiness studies, approximately 50 percent of the time, with courses required in written and oral communication, natural sciences, humanities, and social sciences, particularly political science and economics. (2) General business studies, approximately 25 percent of the time, with courses required in marketing, production, finance, industrial relations, business law, and statistics. (3) Accounting studies, approximately 25 percent of the time, with courses required in elementary, intermediate, and advanced accounting principles, cost accounting and cost analysis, auditing principles and procedures, and problems of income tax accounting. Some elective courses are also suggested in each of the three fields.

Inasmuch as the report of this committee has been published, academic administrators and professional practitioners now have available a recommended pattern of undergraduate accounting education with which they can compare their views.

A few of the 4-year institutions have experimented with proposals to differentiate in the senior year curriculum among students who are interested in public accounting, industrial accounting, and governmental and institutional accounting. These experiments have generally not been satisfactory, and many of them have been abandoned after a trial period simply because 4 years of undergraduate academic work do not provide enough time to accomplish even the three principal objectives given above, let alone allow for any intensive specialization in just one subarea of accounting.

The large majority of students entering careers in accounting, both public and private, are equipped with only the educational background furnished by the typical 4-year program.

Degrees

Most students who are graduated from the 4-year schools receive either a bachelor of science degree (with or without designation in the specialty) or the bachelor of business administration. A few institutions confer the bachelor of arts. For the number of degrees conferred in recent years see table 5.

It should be pointed out that the relationship between the number of students who are graduated in accounting and the number who practice accounting is rather uncertain. When students are graduated, the institutions do not know whether they will eventually work in public accounting or in some other field. Alumni questionnaires which have been sent out to graduates of several of the major institutions also indicate that there is considerable fluidity in the employment experience of their graduates over a period of 15 or 20 years subsequent to graduation. Many graduates, for example, who majored

Table 5—Earned degrees conferred in accounting, 1950–53

Year	Bachelor's and first professional degrees	Master's and second professional degrees	Doctor's degrees
1950–51:			
Men	10,346	468	8
Women	420	24	1
Total	10,766	492	9
1951–52:			
Men	8,216	557	7
Women	335	28	0
Total	8,551	585	7
1952–53:			
Men	7,068	527	2
Women	303	30	[illegible]
Total	7,371	557	2

Source: Compiled from annual reports of earned degrees made by the Offi of Education.

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[8] See *The Accounting Review*, Vol. 29, No. 1, January 1954, for the complete report.

in accounting do not work in what might be referred to as an accounting job. Moreover, some people who major as undergraduates in a nonaccounting field may wind up doing accounting work or even becoming professional accountants. This fluidity is viewed by academic people in general as being highly desirable, and it is possible because of the breadth of training offered to all students registered in the 4-year accredited school of business administration. In addition, a moderate number of students major in accounting as a background for legal, financial, and sales careers. Commonly, however, most of the people who major in accounting as undergraduates or as graduates enter immediately into either public, private, or governmental accounting jobs.

Graduate Study

Up to the present time only a limited number of the accredited and the nonaccredited 4-year institutions offer graduate work in accounting. The typical graduate program permits a moderate amount of further specialization, and the student often takes additional courses in related business fields. But some of the accredited graduate-level-only institutions, such as Harvard, Stanford, and Columbia, do not offer work with specialized emphasis in accounting. Their emphasis rather is on the overall administration of the business enterprise. A few of the accredited institutions offer both the master of science with its emphasis on specialization in fields such as accounting and the master of business administration for those students who did not study business as undergraduates or who desire breadth of training rather than more concentration in one or two fields.

The U. S. Office of Education reports that in the year 1953 a total of 578 graduate and second professional degrees were conferred on persons who chose accounting as their field of major interest. (See table 5.) The figure just cited should not be necessarily taken as indicative of graduate work in public accounting. Many of these candidates took their degrees in the phases of the accounting process relating to industry, corporations, taxation, and governmental accounting.

Postcollege Education Not Leading to Advanced Degrees

Many of the accredited and nonaccredited 4-year institutions offer evening work for persons preparing themselves for the CPA examination. In some instances this work can be coordinated, if the student desires, with a program leading toward an advanced degree, but many students do not desire this coordination. Most of the students engaged in this type of educational effort are typically interested in review courses which will be of immediate help to them in passing the CPA examination. In fact, many of the night courses are styled "CPA Review."

A few institutions offer intensive short-term (2 to 6 weeks) CPA review courses on a full-time student basis for those people who find it possible to leave their professional accounting work and attend the institutions as special students. These people are taught usually by the regular staff of the university in the afternoon and evening, while the students do independent study during the morning. Two or three institutions have attained favorable results from this type of educational effort.

Many universities and colleges also sponsor annually in cooperation with the professional societies 1-, 2-, 3-, or 4-day taxation clinics and institutes, practitioners' study conferences, practitioners' workshops, symposiums, and many additional varieties of conferences. These efforts are all helpful in continuing the education of the public accounting practitioner as well as permitting him to exchange views with people in other parts of the State and country. They also afford the faculty and students of the institution an opportunity to get first-hand viewpoints and case illustrations, and in general they promote a degree of cordiality and friendliness between the professional practitioner and the instructors at the institution which conducts the program. There has been a steady growth in this type of educational endeavor. It may soon be convenient for every practitioner and faculty member to participate in one or more of these events each year.

Current Educational Problems

In a professional field of endeavor which has developed for the most part in the past 40 years or so, naturally there are some cross currents in its educational aspect. These problems, however, have not aroused as much dissension in accounting as in some other professions. One of the reasons why there has been relatively less dissension may be attributed to the fact that accredited and nonaccredited 4-year schools of business administration have not made strong avowals of training all their students for the field of public accounting, even though each year many of their students do enter the ranks of public accounting. The situation, therefore, is not the same as in architecture and medicine, for example, since persons study architecture only to be architects, and they study medicine to be physicians. In contrast, less than half of the people majoring in accounting in 4-year institutions go into public accounting immediately upon graduation. (This proportion varies widely among the 200 or so schools which have programs in accounting.) Educators and public practitioners, however, are not and should not ever be satisfied with the quality of the education of the people entering the profession of public accounting. For this reason, if for no other, there will always be some educational problems which are under constant discussion and for which more satisfactory answers or solutions are being sought. Space permits only a short summary of a few of the ones now current.

Many accounting graduates not immediately useful in the work of public accounting.—Most of the criticism of this type stems from the smaller firms of practitioners which find that many college graduates who have majored in accounting can not immediately do responsible audit work, prepare tax returns, and perform other public accounting duties. The larger firms of public accountants do not generally regard this possible deficiency as being serious since they apparently do not feel that the newly employed graduate should immediately be assigned responsibilities and duties beyond the aspects of his day-by-day work. Furthermore, several of the major firms have well-organized intensive staff-training programs to which all newly recruited personnel go for a period of a month or more before being sent out to the offices of the CPA firm. In these staff-training programs the newly employed graduate is given a quick overview of what will be expected of him on the job. It is doubtful whether this criticism of the new graduate can be resolved unless a program of internship is put into effect and integrated with the student's academic work. About 30 of the larger institutions have already experimented with this type of cooperative effort to make the graduate more immediately useful. Both large and small public accounting firms have supported internship programs, but most institutions have found it very difficult, if not impossible, to get the majority of their students to participate in the program before graduation.

Schools with inadequate staff, facilities, and other resources.—Because public accounting is a new profession offering substantial financial rewards, a number of institutions have started programs in accounting to obtain additional students. They offer programs leading toward a major in accounting, often with an inadequate and untrained staff, with insufficient supporting work in business administration, and with practically no accounting library and the other usual academic facilities. Since there is no professional accounting accrediting group or agency, these institutions may announce and conduct such programs as their whims may dictate. Of course, their programs are not accredited by the American Association of Collegiate Schools of Business until they have met the standards of that agency, but most parents and prospective students simply do not appreciate the distinction between an accredited school of business with a major in accounting and one that is not so accredited. Most patrons of these schools are satisfied, at least until their sons or daughters are graduated, if the entire institution is accredited in the broadest way by the regional accrediting association. What, if anything, should be done about this situation is still one of the unresolved problems before the authorities in both academic and professional circles.

Prospects for improvement in the quality and training of faculty personnel.—This problem has been one of concern to thoughtful practitioners and academicians for many years, but it has been particularly acute in the years since World War II. The schools of business administration experienced a very sharp increase in enrollment after 1945 until about 1950. All accredited schools of business administration require every student to study accounting for one or more semesters as part of his general business training. This makes for an extremely large teaching personnel requirement. To be added to this load, of course, is the faculty needed to conduct the work at the intermediate and advanced levels and graduate programs (if any). Although the scarcity of qualified people to teach the elementary accounting courses has been and is still acute, the scarcity of qualified people to teach the advanced students, including those majoring in accounting, is a more serious matter. As would be expected, a dozen or two major institutions are able because of their prestige and resources to attract and retain the more qualified teaching staff members. The other 175 or more institutions must often close their eyes to the inadequacies of their accounting staff. This situation is likely to become even more acute in view of the predicted sharp increase in university enrollments during the next decade.

A considerable part of this problem stems from the fact that the rank and file of educational institutions simply do not have the resources available to attract qualified persons and retain them in the teaching phase of the profession. For instance, a large percentage of the 4-year institutions do not offer a full-time instructor in accounting, equipped with a master's degree and a variety of experience, as much pay as a bachelor candidate can obtain on his first job in public or private accounting. To make matters worse, later financial opportunities and possible promotions are both severely limited.

Haphazard growth of graduate work in accounting.—While the number of institutions offering graduate work in accounting is not large in proportion to the total number of undergraduate accounting programs, many of these graduate programs have not been properly planned and staffed. Some institutions are offering graduate degrees with staffs and facilities which are not even adequate for good undergraduate instruction. Other institutions offering graduate work have too few courses of graduate quality; the first year of graduate work in these instances frequently consists of proliferating course work in accounting of undergraduate level with little opportunity for independent study and research by the student.

Wide disparity between States as to the requirements of education and experience for practicing public accounting as a CPA.—Even though all the States and Territories now use the Uniform 2½-day CPA Examination and even though a total of 45 State examining boards use the central grading service of the American Institute of Accountants, there is still a tremendous disparity between the jurisdictions in regard to education and experience requirements. This disparity exists (it has even become more acute in the past 20 years) in spite of the common assumption that the responsibilities and duties of the CPA are substantially the same throughout all the States.

The extent and seriousness of the disparity referred to above may be indicated in the following incomplete summary: A few States require graduation from a 4-year "approved" college or university, with a major in accounting, plus 2 or 3 years of full-time practical experience, plus the successful completion of the CPA examination. One or two States require graduation from a 4-year "approved" college or university, plus a year of graduate work in accounting or in lieu thereof 2 years of practical experience, plus the successful completion of the CPA examination. Other States require graduation from a 4-year "approved" institution with no experience, or in lieu thereof 2 or 3 years of university study plus 2 or 3 years of practical experience, or in lieu thereof high school graduation plus 4 or 5 years of experience, plus in each case the successful completion of the CPA examination. Many States require graduation from high school, plus 1, 2, or 3 years of practical experience, plus the successful completion of the CPA examination. Some States permit the candidate to sit for the CPA examination at any time (1) after graduation from high school and attainment of a certain age, or (2) after graduation from an "approved" institution. The practical experience requirement of 1, 2, or 3 years can, in these jurisdictions, be fulfilled after the candidate has passed the CPA examination. A few States have no experience requirements either before or after passing the CPA examination. There is no consensus among the States regarding the type or quality of experience requisite to the practice of public accounting as a CPA, or the extent to which higher education may be regarded as a partial or full substitute for experience. Even though it is assumed that the profession of public accounting is conducted on the same plane and with the same degree of professional expertness in all the States and even though a uniform examination is now used, there are many legal and regulatory barriers to the interstate practice of CPA's.

The recently constituted 25-man Commission on Standards of Education and Experience for the Practice of Public Accounting as a CPA, previously referred to, is now engaged in a long-range study of the implications of the disparities noted above. The work of the commission is currently in an exploratory stage.

Separate schools of accounting.—From time to time a few people in both academic and professional accounting have proposed the establishment of separately administered schools of accounting independent of but coordinated with typical 4-year schools of business administration. Although these proposals have in some instances been carefully thought out, they have received little support from either accounting instructors or practitioners. At some time in the future such schools may be considered necessary, but no concerted effort is now being given to the proposals by authorities in the field. One stumbling block in the path of any group seriously considering these proposals is the same as confronts the administrators of undergraduate curriculums: Would the school purport to train people just for public accounting and, if not, how would the problems of specialization be handled? Another pertinent reason why these proposals have not gained more support is that the accredited schools of business administration are apparently doing a fairly satisfactory job at the undergraduate level, so far as student time will permit, and, if further academic training is desirable and necessary, the same institutions can accomplish the objectives and fulfill the need by expanding the size and quality of the graduate program leading to advanced degrees.

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4. Agricultural Education

By G. M. CAIRNS*

EDUCATION in agriculture has been a dynamic force in the development of the agricultural potential of this country. The land-grant colleges and universities have been the primary seat of agricultural education. Throughout the history of these institutions the programs and curriculums in agriculture have been adapted to meet the needs of the people of the respective States. With the improvement in methods of transportation, farm mechanization, refrigeration, processing, and communication, education in agriculture has been adapted to keep pace with the needs for trained people in the fields of production, economics, processing, and marketing.

Field of Service for College Graduates in Agriculture

Employment opportunities for college graduates in agriculture are wide. In a recent survey of its alumni, the School of Agriculture at Michigan State College classified their occupations under several headings.[1] Since these classifications cover the principal occupations in which opportunities are open to graduates in agriculture, they are used in this chapter. They are: (1) "Agricultural Business and Industry," including personal ownership of business or administrative, supervisory, or managerial positions associated with the purchase, manufacture, processing, or distribution of agricultural products or items such as feed, fertilizer, farm machinery, insecticides, fungicides, and other products used in agriculture. (2) "Public Agricultural Service," including positions as agricultural specialists or administrators in the various branches of the United States Department of Agriculture, as county agents, specialists or administrators in the Cooperative Agricultural Extension Service to bring to the farm people the application of modern agricultural science developed by research. Many are employed in various capacities by State departments of agriculture and other public agencies. (3) "Teaching," including positions as teachers of vocational agriculture in high schools or as staff members teaching subjects in the field of agriculture in colleges or universities. (4) "Farming." (5) "Research," including work in agricultural experiment stations or with industry. A number of graduates are employed outside the field of agriculture.

The number of persons engaged in agriculture has increased with the expansion in services indicated previously. In general, the demand has been good for the graduates in agriculture. In some fields the supply may exceed the demand temporarily, but if the training is broad enough, there is usually little difficulty in placing the men. It is to be expected that a number of agricultural college graduates will find employment outside the field of agriculture. Approximately one-fourth of the group in the Michigan alumni survey were not engaged in agricultural work.

It is difficult to estimate the number of people employed professionally in the field of agriculture because of the varied types of occupations they may choose upon graduation. The demand for well-trained young men with adequate farm backgrounds, plus professional training in agriculture, has been at a high level for many years. This has been due to the expansion in services and opportunities open to young men with professional education in agriculture. Even though the number of people engaged in agricultural production has decreased, the types of farm operations have changed so much that many more people than formerly are needed to provide the services required by efficient farm operators. Developments in the methods of processing, preparation, and packaging of food products have also provided numerous opportunities for technically trained people in the food industries. Modern science has added to information in these areas, and continued developments can be expected in the future which will increase the demand for well-trained people.

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[1] Michigan State College, *What the Agricultural Alumni Think:* A Study of Career Selection and Training in the Field of Agriculture. East Lansing, Mich., School of Agriculture, Michigan State College, 1954. 32 p.

Professional Organizations

With the development in the various phases of agriculture, scientific societies or other groups have been organized to meet the needs of the people engaged in the specific areas of work. At the annual meetings of these organizations, new developments in the field are presented and opportunity is provided for professional workers to exchange ideas. Many societies publish journals. Among them are the American Farm Economics Association, the American Dairy Science Association, the American Phytopathological Society, the American Society of Agricultural Engineering, the American Society of Agronomy, the American Society of Animal Production, the American Society of Horticultural Science, the Entomological Society of America, the Poultry Science Association, and the Soil Science Society of America.

The National Vocational Agricultural Teachers' Association is a professional organization serving teachers of vocational agriculture. A helpful publication, *The Agricultural Education Magazine*, is sponsored by the Agricultural Section of the American Vocational Association. A number of societies cover branches of the plant science field, including plant physiology, plant pathology, botany, and the like. In addition, many other organizations serve highly specialized fields that would be included in a complete list of groups making valuable contributions to agricultural programs.

Development of Higher Education in Agriculture

The beginning of higher education in agriculture in the United States dates from about the middle of the 19th century. A State constitution adopted in Michigan in 1850 required the State to establish and maintain a college of agriculture. Seven years later the Michigan Agricultural College was opened for students. In 1854 the Legislature of Pennsylvania incorporated the Farmers' High School which later became the Agricultural College of Pennsylvania. The school was opened in 1859. In 1856 the State of Maryland chartered the Maryland Agricultural College, which was opened in 1859. At the same time efforts were being made in other States to establish institutions of like character.

This movement for agricultural education was greatly stimulated by the Morrill Land-Grant Act of 1862. Under this law the Federal Government granted to each State public lands which were to be sold and the proceeds of which were to be used as an endowment for a college of agriculture an mechanic arts. As a result each State has estab lished 1 or 2 such colleges. Collectively the insti tutions are known as land-grant colleges an universities.

Although these institutions were to teach agri culture, mechanic arts, and military tactics, the la did not contemplate the exclusion of other scientif and classical studies. These colleges were intende "to promote the liberal and practical education o the industrial classes in the several pursuits an professions in life." In these institutions instructio in agriculture was and is a principal feature. Indee the schools of agriculture in the land-grant college and universities are the mainstay of higher educatio in agriculture in the United States.

The instruction in agriculture has profited greatl from the establishment of agricultural experimen stations in the land-grant institutions. The r search in agriculture has been greatly aided b Federal appropriations, beginning with the passag of the Hatch Act in 1887. These stations develope the subject matter of scientific agriculture and to large extent afforded means for the preparation o college teachers of agriculture and research worker In 1862 there was in existence only a small body o scientific knowledge of agriculture; today there is great abundance.

Two other acts of Congress brought into bein phases of work that are of primary importance i agricultural education. The first of these—th Smith-Lever Act, passed in 1914—provided fo cooperative extension work in agriculture and hom economics. It has resulted in the development o the county agent system. The other of these—th Smith-Hughes Act, passed in 1917—provided, amon other things, for vocational agricultural education i high schools and for training teachers of vocationa agriculture.

Although most of the professional education i agriculture is offered by the land-grant colleges an universities, a considerable amount is offered in number of other colleges and universities.

Educational Associations

The Association of Land-Grant Colleges an Universities, established in 1887 as the Associatio of American Agricultural Colleges and Experimen Stations, consists of the 35 land-grant colleges an universities in the Northern States, and in Alask Hawaii, and Puerto Rico, and the 17 institutions fo white students in Southern States. At the annu meetings of the association the program of the Section on Resident Instruction of the Division of Agriculture serves as a medium for exchange of ideas and discussion of programs of agricultural education. Other sections consider questions relating to research and to extension work in agriculture.

The presidents of the 17 land-grant colleges and universities for Negroes hold an annual conference for the discussion of problems relating to their institutions and programs.

Surveys and Studies

Several studies have been made of agricultural education in the United States. One of these was a part of the comprehensive survey of the land-grant colleges and universities made from 1927 to 1930 by the Office of Education, then a bureau in the Department of the Interior, at the request of the Association of Land Grant Colleges and Universities.[3] The section of the report which dealt with agriculture reviewed the development that had taken place up to that time and presented a wealth of information on the status of agricultural education in 1927–30. Separate sections of the report dealt with the agricultural experiment stations and the cooperative extension service.

A series of three studies on the history of agricultural education were made by Alfred Charles True, for about 40 years a staff member of the United States Department of Agriculture. The three monographs resulting from the studies are: (1) *A History of Agricultural Extension Work in the United States, 1785–1923;* (2) *A History of Agricultural Education in the United States, 1785–1925;* and (3) *A History of Agricultural Experimentation and Research in the United States, 1607–1925.* These monographs present a comprehensive picture of the history of all phases of agricultural education.

Schools and Enrollments

In general 4 types of higher education institutions offer instruction in agriculture. The largest, and by far the most important, group includes the 69 land-grant colleges and universities of which all except one offer 4-year courses of study in this field. The other institutions offering instruction in agriculture are classified as technical schools or institutes, liberal arts colleges, teachers colleges, and junior colleges.

A total of 32,770 undergraduate students were enrolled in agricultural curriculums in the land-grant colleges and universities in 1952–53. (See table 6.) Enrollments in agricultural curriculums have varied greatly during the past 40 years. In the land-grant institutions they reached a peak in 1948–49.

Table 6.—Undergraduate students in agriculture and degrees conferred in agriculture in land-grant colleges and universities, 1900–1953

Year ended—	Undergraduate students			Degrees conferred	
	White [1]	Negro [2]	Total	Bachelors	Graduate
1900	4,110	--------	4,110	--------	--------
1905	2,428	--------	2,428	--------	--------
1910	7,913	--------	7,913	886	83
1915	14,886	--------	14,886	2,311	150
1920	14,275	--------	14,275	2,296	321
1925	11,715	198	11,913	2,339	388
1930	12,772	--------	12,772	1,938	600
1935	13,818	--------	13,818	2,079	425
1940	29,519	733	30,252	5,220	776
1941	27,917	690	28,607	5,435	869
1942	23,356	585	23,941	4,967	693
1943	18,354	552	18,906	3,874	435
1944	4,207	187	4,394	1,160	281
1945	4,751	246	4,997	628	214
1946	18,971	510	19,481	1,396	319
1947	38,475	549	39,024	4,170	829
1948	45,270	1,369	46,639	5,969	1,213
1949	45,848	1,982	47,830	8,683	1,526
1950	45,518	1,965	47,483	12,720	1,835
1951	38,825	1,990	40,815	10,116	1,843
1952	33,091	1,474	34,565	7,867	2,028
1953	31,291	1,479	32,770	5,615	1,529

[1] In institutions not segregated as to race, and institutions maintained for white students in 17 Southern States.

[2] In institutions maintained for Negro students in Southern States.

Professional College Programs and Degrees

The requirements for admission to colleges of agriculture are similar to the requirements for admission to other colleges. Agricultural education in high school is acceptable but is not a requirement for entrance.

When the first colleges of agriculture were established, their primary purpose was to prepare for general farming, but that is no longer their main function. Increasingly the objectives of higher education in agriculture have become those of preparing (1) research workers in the scientific and social fields related to agricultural production and distribution and to rural life, (2) extension workers for services in the dissemination of knowledge to farmers and homemakers in rural areas, (3) workers in all types of business and commercial activities related to agricultural production, distribution, and service, (4) teachers of vocational agriculture in the public high schools, (5) employees of the State and Federal Governments in investigation and regulatory work, and (6) overseers and managers of specialized and large-scale farm enterprises.

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[3] The 2-volume report was published as Bulletin 1930, No. 9—*Survey of Land-Grant Colleges and Universities.*

The curriculum in agriculture is on the undergraduate level. The student enrolls upon graduation from high school. Courses in the humanities and the physical, biological, and social sciences are included along with the study of agriculture. The curriculum is intended to provide a well-rounded education for the students. Upon graduation, qualified students may continue with graduate programs.

Numerous subjects of instruction have been developed within the field of agriculture. Agricultural economics deals with problems in farm management, marketing, credit and finance, cooperatives and other economic areas. Agricultural engineering, functioning through such specialties as power and farm machinery, farm structures, soil and water conservation and management, and electrification, is concerned with the development, adoption, and correct use of the machinery now employed so abundantly and efficiently in American agriculture. Agricultural education courses help to prepare teachers for the vocational agriculture departments of the Nation's high schools. The soils and plant areas of agronomy cover a number of activities on the farms related to the production, harvesting, and storage of crops and the use of fertilizers.

A group of subjects are related to the animal industries with emphasis on nutrition, physiology, genetics, economics, and disease control. Animal husbandry is concerned mainly with producing beef, pork, mutton, and wool profitably and economically. It shares with dairy husbandry mutual interests in the development of better pastures, artificial insemination, control of livestock diseases, and the solution of other problems common to livestock and livestock products. Within the dairy field are the specialty areas of dairy production and dairy technology. Poultry husbandry covers the various subjects related to such matters as egg production, broiler production, and hatchery operations for chickens and turkeys.

The field of horticulture has also experienced a rapid growth, based upon the demand for a greater variety and better quality of fruits and vegetables. Floriculture, landscaping, and nursery crop produ tion have flourished in recent years and have foun significant places in the agricultural curriculu Closely allied with the field of horticulture, as we as the animal science fields, is the food technolog program with its developments in processing, packa ing, freezing, and other practices relating to th preservation and marketing of food.

Other subjects in the curriculum are entomolog and plant pathology with their practices for co trolling insect and fungus pests and protecting agr cultural products during marketing and storag Conservation is another highly useful subject. A these subjects in agriculture represent the applicatio of basic sciences to agricultural problems. Amon the basic sciences serving agriculture and include in the agricultural curriculum are botany and oth plant sciences, bacteriology, geology, zoology, phy ics, and chemistry.

These subjects are organized in various ways make up the curriculums in agriculture. Usually student begins with basic sciences and gradual moves into the applied subjects. In the upper yea he devotes most of his efforts to his major field study. Thus the agricultural graduate tends to rather highly specialized.

In a number of institutions joint 5-year progra are provided between the college of agriculture a the college of engineering. The joint progra enable students to complete work in some phases agriculture and engineering.

The bachelor of science degree is awarded for co pletion of the undergraduate 4-year curriculum agriculture. The requirements for the degree va considerably among the institutions for no minimu standards have been established in this field by national organization.

The number of bachelor's degrees in agricultu conferred by 68 land-grant colleges and universiti (the Massachusetts Institute of Technology— land-grant institution—offers no instruction agriculture) for the year ended in 1953 was 5,6 (see table 6). During the same year 65 non-la grant institutions of higher education confer 1,044 bachelor's degrees in agriculture.

Graduate Study . .

For years the agricultural colleges have be offering graduate instruction, and they enroll siza numbers of graduate students. By far the grea part of this work is found in the land-grant colle and universities. During the year 1952–53, 53 of these institutions conferred a total of 1,121 master's or second professional degrees in agriculture and 26 of them conferred a total of 408 doctor's degrees in this field. Also 8 non-land-grant institutions conferred a total of 74 master's degrees in agriculture.

Graduate work in agriculture is greatly stimulated by the research programs in the agricultural experiment stations of the colleges of agriculture. In most of the colleges the graduate work is closely articulated with the work of the stations. The opportunities for research in the stations are extended not only to members of the teaching staff, but also to graduate students who may be doing research work for advanced degrees, in connection with experiment station projects.

Research

Higher education in agriculture in the United States had a modest beginning with the development of the land-grant college system. At the outset the work was carried on by people with training in the natural sciences, but the need for the development of new information in the field soon became evident. The United States Department of Agriculture was established by Congress in 1862 to help promote and develop the agriculture of the country through education and research. The instructional program was made possible in the same year, but it was not until 1875 that the first Agricultural Experiment Station was established in the United States at Wesleyan University in Connecticut. This is now known as the Connecticut State Station of New Haven.

In 1887 the Hatch Act was passed by the Congress providing for the establishment of an agricultural experiment station in every State in the United States, usually as a part of the land-grant college. This act described the type of work to be performed by the Agricultural experiment stations, established supervision by the Department of Agriculture, and provided for a means of getting information to the farmers. This broadened the activities of the colleges of agriculture and made possible the development and accumulation of scientific information of great value in the teaching programs. Subsequently other acts were passed by the Congress increasing the amounts provided by the Federal Government to the various experiment stations for the further development of the research programs in agriculture through the experiment stations.

The States have recognized the importance of the research program and have increased their appropriations for experiment stations to meet the costs of the research activities.

Through research marked progress has been made in the development of hybrid corn, new varieties of plants, knowledge of soil conditioners and fertilization factors, animal and poultry nutrition, farm management, and many other subjects pertaining to agriculture. The research program in agriculture has provided an excellent training ground for young men preparing for research. The coordination of the work in the experiment station and the colleges of agriculture has made it possible for the students to be kept abreast of the new developments in the field and to be closely associated with people engaged in the research program.

The type of research carried on by the experiment stations varies considerably with the needs of the State. A balanced program consisting of both basic and applied work must be in effect to help solve the specific problems facing the farmers in each State. In recent years closer cooperation in research has been developed on a regional basis.

Through the agricultural experiment stations the Nation carries on the most extensive agricultural research in the world. The stations issue annually vast numbers of publications which are widely distributed. The information contained in them forms the basis of much of the resident instruction and the extension work of the agricultural colleges. Industry also spends large sums for research on agricultural products and on machinery and materials used in agriculture—larger sums than are expended from public funds.

Extension Work

Reference was made in an earlier section of this chapter to the Smith-Lever Act and cooperative extension work in agriculture and home economics carried on by the land-grant colleges and universities. Subsequent Federal legislation has provided additional appropriations and thereby greatly expanded this work. This activity is carried on through county agents—agricultural, home demonstration, and boys' and girls' club. It reaches the rural population on their farms and in their homes. Through the cooperative extension work rural leaders are developed, farm and home practices are improved, crop and livestock production is increased, community enterprises are encouraged, and the standard of living among rural people is raised.

Short courses and institutes offered by the colleges of agriculture are related to the extension work. These courses and institutes for farmers run from a few days to a few weeks. They are distinctly vocational in character and are directed toward making farmers more proficient in their work and living.

Current Problems

Agricultural education in the colleges is not without some well-known problems. One is found in the fact that a goodly number of young men admitted to the agricultural colleges have previously taken vocational agriculture courses in high school and acquired considerable knowledge and experience in agriculture. The problem for the college of agriculture is to provide for good articulation with the agricultural education in high school so as to avoid needless duplication for the student and to provide for him as extensive an education as possible in his college career.

As the knowledge of agriculture has increased, the colleges have tended to fragment substantial courses covering sizable areas into numerous courses with greater detail and specialization. This development is in keeping with the specialized and research interests of members of the teaching staffs, but it works to the disadvantage of students such as those who prepare for teaching vocational agriculture, serving as county extension agents, and managing farms, all of whom need a well-rounded and balanced education covering various aspects of agriculture. The problem of the colleges is to provide a balanced education in the midst of a plethora of narrowly specialized instruction.

Instruction in agriculture is greatly facilitated by adequate laboratories and physical equipment including land and livestock. With the increasing enrollments in agriculture it has been very difficult to provide enough laboratory experience for the students. A result has been an increasing amount of didactic instruction with decreasing first-hand contact with materials and operations. How this situation can be changed is a problem that faces many of the colleges at present.

Numerous colleges without adequate facilities and staff are offering education in agriculture, which presents a problem of establishing and maintaining adequate standards of instruction throughout the Nation. This problem has been the subject of prolonged discussion in the meetings of leaders in agricultural education, but it has not been solved. There is no system of accreditation of agricultural colleges like that which prevails in other forms o technical and professional education.

The increase of food production has brought man changes in the agriculture of the Nation. With th increase in population there is more competitio for land, which requires greater efficiency on th part of the farmers. More services are provide by agriculturally trained personnel in business an industry. The proportion of farm-reared yout studying agriculture in the colleges has decrease along with the percentage of people on farms; at th same time there has been a continuing demand fo well-trained personnel in the various pursuits o agriculture. Many of those entering technologica fields related to agriculture are not from the far but from more urban areas. The problem arisin from this situation is to interest a sufficien number of capable youth, both farm-reared an nonfarm-reared, to prepare themselves for agricultural and related occupations.

Colleges of Agriculture and Enrollments

The enrollments in the 68 colleges of agriculture i the land-grant colleges and universities in the fall o 1953 are shown below. The first number indicate the undergraduate and the second number the graduate students. Institutions marked (N) are maintained primarily for the education of Negroes.

ALABAMA
Alabama Agricultural and Mechanical College (N), 54, 0
Alabama Polytechnic Institute, 451, 41

ALASKA
University of Alaska, 4, 0

ARIZONA
University of Arizona, 271, 35

ARKANSAS
Agricultural, Mechanical, and Normal College (N), 29, 0
University of Arkansas, 295, 35

CALIFORNIA
University of California, 789, 247

COLORADO
Colorado Agricultural and Mechanical College, 796, 19

CONNECTICUT
University of Connecticut, 273, 0

DELAWARE
Delaware State College (N), 17, 0
University of Delaware, 124, 18

FLORIDA
Florida Agricultural and Mechanical University (N), 74, 7
University of Florida, 217, 126

GEORGIA
Fort Valley State College (N), 73, 0
University of Georgia, 446, 24

HAWAII
University of Hawaii, 151, 7

IDAHO
University of Idaho, 272, 22

ILLINOIS
University of Illinois, 738, 238

INDIANA
Purdue University, 817, 206

IOWA
Iowa State College of Agriculture and Mechanic Arts, 1,081, 150

KANSAS
Kansas State College of Agriculture and Applied Science, 879, 89

KENTUCKY
Kentucky State College (N), 23, 0
University of Kentucky, 432, 56

LOUISIANA
Louisiana State University and Agricultural and Mechanical College, 302, 77
Southern University and Agricultural and Mechanical College (N), 61, 0

MAINE
University of Maine, 255, 10

MARYLAND
Maryland State College (N), 41, 0
University of Maryland, 519, 129

MASSACHUSETTS
University of Massachusetts, 319, 59

MICHIGAN
Michigan State College, 632, 189

MINNESOTA
University of Minnesota, 558, 185

MISSISSIPPI
Alcorn Agricultural and Mechanical College (N), 103, 0
Mississippi State College, 568, 91

MISSOURI
Lincoln University (N), 20, 0
University of Missouri, 1,031, 154

MONTANA
Montana State College, 325, 21

NEBRASKA
University of Nebraska, 570, 69

NEVADA
University of Nevada, 57, 1

NEW HAMPSHIRE
University of New Hampshire, 103, 17

NEW JERSEY
Rutgers University, the State University of New Jersey, 384, 152

NEW MEXICO
New Mexico College of Agriculture and Mechanic Arts, 284, 11

NEW YORK
New York State College of Agriculture (Cornell), 1,558, 450

NORTH CAROLINA
Agricultural and Technical College of North Carolina (N), 169, 66
State College of Agriculture and Engineering of the University of North Carolina, 641, 134

NORTH DAKOTA
North Dakota Agricultural College, 301, 17

OHIO
Ohio State University, 1,428, 173

OKLAHOMA
Langston University (N), 32, 0
Oklahoma Agricultural and Mechanical College, 1,252, 80

OREGON
Oregon State College, 631, 106

PENNSYLVANIA
Pennsylvania State University, 1,069, 233

PUERTO RICO
University of Puerto Rico, 235, 0

RHODE ISLAND
University of Rhode Island, 148, 8

SOUTH CAROLINA
Clemson Agricultural College, 596, 12
South Carolina State College, 137, 0

SOUTH DAKOTA
South Dakota State College of Agriculture and Mechanic Arts 420, 32

TENNESSEE
Tennessee Agricultural and Industrial State University (N), 82, 1
University of Tennessee, 562, 45

TEXAS
Agricultural and Mechanical College of Texas, 1,162, 169
Prairie View Agricultural and Mechanical College (N), 163, 3

UTAH
Utah State Agricultural College, 450, 84

VERMONT
University of Vermont and State Agricultural College, 252, 5

VIRGINIA
Virginia Polytechnic Institute, 305, 16
Virginia State College (N), 112, 5

WASHINGTON
State College of Washington, 224, 95

WEST VIRGINIA

West Virginia State College (N), 24, 0
West Virginia University, 213, 54

WISCONSIN

University of Wisconsin, 606, 497

WYOMING

University of Wyoming, 206, 25

Total enrollment:	
Undergraduate:	
Men	26,654
Women	762
Total	27,416
Graduate	4,805
Grand total	32,221

In addition, 50 non-land-grant institutions reported a total of 5,747 undergraduate students in agriculture, and 6 of them reported 114 graduate students in the same field.

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5. Architectural Education

By WALTER A. TAYLOR*

ARCHITECTURAL EDUCATION includes the training of personnel for professions or occupations in or related to the building industry. In addition to architects, these personnel embrace technical specialists such as structural engineers and building contractors; subprofessional personnel such as specification writers, superintendents, draftsmen and delineators; and persons in certain commercial occupations such as sales engineers for building materials and equipment. However, this report is concerned only with curriculums which train for professional practice by a licensed or registered architect. These curriculums may include accredited curriculums in architectural engineering, architecture-structural option, or similar fields.

The Architect

The function of the architect is to exercise professional leadership in the farflung building industry and to practice the complex art and science of planning and designing structures for human occupancy and use which are functional and efficient, safe and structurally sound, and esthetically satisfying. The position of the architect in building is analagous to that of the "systems engineer" in other industries that are based on science, research, and technology. He is the generalist, the technologists are the specialists; both are indispensable. The architect's position and function are defined by law in all States.

The difficult educational specification is that the architect must know enough of the theory and practice of the specialized technologies, but he can not be a specialist in any one of these. He must also have a general understanding of the contributory social sciences. His position and its requirements have been well indicated in the following language.

"To a building project the architect brings acquirements and a range of services that cannot be matched by any other factor in the operation. He is not a building contractor, nor is he a structural engineer; neither is he a banker or real estate agent; yet he must have enough experience to advise his client on the respective weight of each element that these individuals bring to his project. He must recognize quality of construction and value of property; he must understand financing and kindred matters that will enable the owner to forecast the value of his investment both at the completion of his building and through the years to come. From start to finish he is the one person in the building industry whose interests are identical with the owner's. He is his client's professional adviser and representative; he plans, he specifies, obtains bids, draws contracts, supervises the progress of the work, oversees construction accounts; he is, in a word, the administrative head of a complex operation carried out by many hands. He must indeed be a man of many talents." [1]

Number of Architects, Demand and Supply

The 1950 United States census reported 25,000 architects, but the census definition is not limited to licensed architects. (See table 7.) The American Institute of Architects' (AIA) survey in 1950 was based on a total of 19,183 licensed architects.

Recent studies made by the American Institute of Architects Survey Commission and by the Study Commission for Architectural Education of the Southern Regional Education Board indicate increasing demand for architectural services due to: Increased population; increased ratio of urban population; greater complexity of building construction requiring coordination; new and more complex types of buildings requiring skilled planning; increasing cultural maturity and higher living standards;

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[1] H. Daland Chandler, "What is an Architect?" in *Architecture: A Profession and a Career.* Washington, D. C., The American Institute of Architects, 1945, p. 12-13.

and younger practitioners establishing themselves in smaller communities, previously serviced from larger cities for only larger projects.

Table 7.—Architects in the United States reported by the Decennial Census, 1870–1950*

Year	Number	Year	Number	Year	Number
1870	2,038	1900	10,481	1930	21,621
1880	3,350	1910	16,311	1940	21,976
1890	8,048	1920	18,048	1950	25,000

*The data for years preceding 1940 were compiled on a slightly different basis from that used in more recent years.

Source: Bureau of the Census.

The large number of students enrolled in collegiate schools (11,000) does not necessarily represent a potential oversupply. The curtailed training during the war and the present armed service induction of graduates have caused a shortage of draftsmen and junior or candidate architects at the present time.

According to all economic and social indices which can be adduced, there will not be enough architecturally trained personnel in 1960.

Professional Organization

The national professional association in architecture is the American Institute of Architects, founded in 1857, on the groundwork of an earlier lapsed organization, the American Institution of Architects established in 1837. The institute now has 10,165 members and fellows. It is estimated that about 14,000 of the Nation's registered architects are eligible for membership in the institute. All members must be registered architects, except teachers and editors admitted by action of the board of directors.

Fellows are members who are advanced to this rank by a jury from among those nominated by other members. They usually comprise between 3 and 5 percent of the total membership. All members and fellows are assigned to chapters—there are 118 chapters—by residence or location of office.

The institute is incorporated under the laws of the State of New York. Its operating headquarters are in Washington, D. C., in the historic Octagon House.

In addition to a variety of pamphlets, bulletins, service documents, and contract forms used by the entire profession, the institute publishes three periodicals: *The Journal of the American Institute of Architects*, issued monthly; *Memo*, a 4-page flash news she issued fortnightly; and the *Bulletin of the America Institute of Architects*, a publication containing abstracts of technical and research publication reference guides, and other technical informatio issued bimonthly.

Licensure

Laws have been enacted in all States, the Distric of Columbia, Alaska, Hawaii, and Puerto Ric requiring architects to be registered or licensed The first State to require licensure was Illinois i 1897. By 1920 only 19 States had passed such law and 11 more were added in the following decad Wyoming, the first State to license engineers, wa one of the last two (with Vermont) to license architects, 1951.

There is still considerable lack of uniformit between the States with respect to mandatory o permissible use of the title of architect; exemptio for size, type, or dollar volume of building; relationship of licensing of architects to licensing of professional engineers; nature and length of examination and preferential treatment of graduates of accredite schools.

Registration requirements vary in the differen States. Most laws require graduation from a approved school of architecture plus 3 years o experience for admission to examination; or in lie of this combination, a long period of practical experience. The examination is conducted by a Stat licensing or registration board.

Architects may be commissioned to design projects in States other than their State of origina registration and are then faced with the necessity o securing registration in other States. Reciprocit arrangements between some of the States have in th past made that possible without examination o personal appearance. However, the procedure wa far from general, there was great disparity in standards, and there were other undesirable features i direct reciprocity. This situation led to the formation of the National Council of Architectural Registration Boards (NCARB) in 1920. It is compose of representatives of the various State boards.

The Council has established Junior and Senio examinations, both of which are administered b State boards on behalf of the council. The candidate may take the examination only after he has submitted to the Council satisfactory credentials an record of education and experience. National council certificates are awarded to successful candidate the council holding complete records for reproduction as may be required.

The Junior procedure (filing records, giving 4-day examinations, and awarding certificates) is for those of limited experience seeking their first registration. The Senior procedure (including an oral rather than a written examination) is for architects of 12 years' practice as responsible principals.

The holder of a council certificate seeking new registration in a given State instructs the council to send copies of his record and certification to the board of that State, with reasonable assurance that he will be granted registration without examination or personal appearance. However, the State boards have not delegated their authority, and the council certification is not binding on them.

In order to promote improved and more uniform standards and procedures, the NCARB issues recommended examination syllabuses and model registration laws for the guidance of the State boards in their respective internal operations.

Evolution of Architectural Education

The antecedents of professional schools for the training of architects are found in several European countries. Their rise during the 18th and specially the 19th centuries was a gradual transition from the age-old apprentice system, motivated by the inadequacies and the abuses of that method. One early school in England originated as a voluntary association of disgruntled apprentices.

The most pronounced influence on American development has come from the Ecole des Beaux Arts, established in Paris in 1816, one of the first completely organized schools. In it the principles and the various categories of architectural knowledge were analyzed and separated into distinct courses of instruction, and there the ancient methods of apprenticeship training were modified and adapted to the work of a well-organized school.

The first organized curriculum in architecture in the United States was established in the Massachusetts Institute of Technology in 1865. The University of Illinois, then the Illinois Industrial University, offered architectural instruction in 1868, Cornell University in 1871, and Syracuse University in 1873.

French influence has been prominent in architectural education in the United States, especially in the methods of teaching design. It was due in part to the fact that many American architects in the past received a part or all of their technical training in Paris at the École des Beaux Arts. In the Paris tradition, emphasis in design teaching was placed on the solving of problems rather than on the lecture as a means of teaching and learning. The French influence has been strengthened and perpetuated partly through the Beaux-Arts Society of Architects organized in New York in 1894 and by a later organization called the Beaux-Arts Institute of Design (BAID), also founded in New York.

For half a century architectural education was dominated by a group of French architects, professors of design, imported as "patrons" or critics, one in each leading school. While they have left indelible marks on the American schools, they have been replaced by their American students, and the French influence has definitely waned. The BAID, organized and dominated by Paris-trained Americans, has also declined in influence, with the rise of a variety of individual and regional theories of architectural education. For the past two decades there has been a strong influence directly from Germany and Austria, former leaders, teachers, or students of the Bauhaus being imported as were the Frenchmen of the previous generation. This influence has also been ingested into the American system, and the Europeans have been succeeded by American followers. One should not, however, overrate these influences on architecture and architectural education in the United States.

Since 1900 the number of schools of architecture has increased rapidly with the result that at present at least one is found in each of 34 States. There are also 5 schools in Canada.

Educational Surveys

In recent years a number of surveys have been made of architectural education. The first of these was conducted by Prof. F. H. Bosworth of Cornell University and Prof. Roy Jones of the University of Minnesota. The findings were published in 1932 under the title, *A Study of Architectural Schools.*

The second study was made in 1940 by Prof. George Young of Cornell University and Prof. Goldwin Goldsmith of the University of Texas. A limited edition of the report was published in mimeographed form.

The third study was undertaken in 1950 by an 11-man commission appointed by the president of the American Institute of Architects to make a survey of architectural education and registration. The project was financed almost entirely by the Carnegie Corporation, which appropriated $87,500 for the work. The AIA provided the services of its director of education and research, some secretarial service, and office space. The report was published early in 1954.

The main part of the survey, based on a 50-percent response to a 49-item questionnaire sent to 19,000 architects, and on 4 special questionnaires to all deans, teachers, State board secretaries, and State board members, was unique in its scope and in combination of factual and opinion responses. An unusual feature of the survey was the series of 10 small conferences, arranged by the Commission members in their respective areas, in which men and women of many professions and occupations (not including architects) discussed questions of the social, economic, and political future of America, the probable pattern of urban life, and the kinds of education recommended for professional leaders, including architects. The proceedings, which have been collated in a single document, were published as a separate volume.

The 2-volume report of the survey was published in 1954 under the general title, *The Architect at Mid-Century.*[3] The main volume, edited by Turpin C. Bannister, bears the subtitle *Evolution and Achievement.* The second volume, edited by Francis R. Bellamy, has the subtitle *Conversations Across the Nation.*

Educational Associations

The principal association in architectural education is the Association of Collegiate Schools of Architecture (ACSA), which was established in 1912. Membership in this organization is by schools, represented by deans, directors, or heads of departments of architecture, and other faculty members. The actions of the association are not binding on member schools. An annual meeting is held, and informal regional meetings are also held annually.

Before the National Architectural Accrediting Board (NAAB) (described later) was established, State boards, veterans' agencies, and other organizations tended to regard membership in the ACSA as tantamount to accreditation, against the intent and wishes of the association. During that period membership was rather selective; admission was by vote of the association at its annual meeting. Since the establishment of the NAAB the association has made an effort to include all degree-granting collegiate schools of reasonable standards. The total of the member schools is now 59, four of them Canadian schools. The association is in effect a society for architectural education.

The American Architectural Foundation (AAF) was established in 1942. Its charter requires that the trustees be citizens of the United States. The objective is to promote education and research through the solicitation of funds which it allocates to approved projects.

The Society of Architectural Historians (SAH), established in 1940, includes in its membership of about 700—teachers, scholars, historians, and researchers in the field of the history of architecture, a standard required subject in all professional schools of architecture. Membership also includes nonacademic practitioners and teachers of art history in nonprofessional schools. The AIA and the American Architectural Foundation partially subsidize the SAH *Journal*, which is published four times a year.

Accreditation

The accreditation of schools of architecture is done by the 6-man National Architectural Accrediting Board appointed by the president of the American Institute of Architects for staggered terms of 6 years. Two members represent and are nominated by the National Council of Architectural Registration Boards and two similarly by the Association of Collegiate Schools of Architecture. Only very rarely does the AIA president make appointments to these four positions other than those nominated, and then only after consultation with the officers of the group involved.

The board was established in 1940, but it has functioned fully only since 1945. Under the charter, which forbids it to establish a standard curriculum, the board elects its own officers and enacts its own operating rules. Its members may be advised but cannot be instructed by their respective parent bodies. The AIA therefore has no direct control of NAAB and accrediting.

Schools of Architecture

The number of institutions in the United State offering professional curriculums in architecture has grown from 13 in 1900 to 64 in 1953. All but two of the degree-granting schools of architecture are parts or divisions of recognized universities, colleges, or institutes of technology. Their administrative relationships are varied. (See table 8.) In the past there were a larger number of departments of architecture in colleges of engineering and insti tutes of technology than at present; the trend is toward organizing the instruction in autonomous or semi-autonomous schools. In a number of institutions the school or department of architecture is the dominant element in a college or school of fine arts, design, architecture and applied arts, or architecture and allied arts.

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[3] Published by Reinhold Publishing Corp., New York.

Table 8.—Administrative relationships of schools and departments of architecture

Administrative pattern	Number of schools		As an example, the school in—
	Accredited	Nonaccredited	
a. Autonomous school or college of architecture; dean responsible directly to the president or provost.	5	1	Columbia University.
b. Semi-autonomous school (not department); head responsible to a dean of a college of liberal arts, fine arts*, or engineering.	8	3	Syracuse University.*
c. Department or school within a college, the title of which includes architecture.	8	0	University of Michigan.*
d. Department within a college of fine arts, applied arts, etc.*	7	3	Yale University.
e. Department in a college of engineering or institute of technology.	17	10	Pennsylvania State University.
Total	45	17	

*In some instances the dean of the college is an architect.

In 1953–54, 64 schools and departments of architecture in the United States enrolled 11,353 professional students. (See table 9.) Of this number, 3,362 were new students, and 1,766 were graduated. The enrollment in the United States and Canada over the past 20 years has run as follows: 1931, 5,900; 1939, 4,300; 1944, 1,700; 1951, 11,300. Since 1939 the enrollment has increased 163 percent.

Schools of architecture, compared with other professional schools, are generally small. In 1939 the median school in the United States and Canada had only 70 students, and three-fourths of all schools had fewer than 100; in 1953 the median enrollment was 142, but three-fourths of all schools had fewer than 200, and one-fourth fewer than 100.

Student mortality in schools of architecture is rather high. In general, only 1 student graduates for every 2½ who enter. Selective admission in the few schools where it is practiced markedly reduces the mortality. This high rate of attrition is not educationally satisfactory, but the profession does not regard it with alarm for the general reason that many students who do not remain in school to graduate become professional assistants and subprofessional technicians required by practicing principal architects. Likewise, transfer of students or "defection" of graduates to related fields, such as construction and sales engineering, is regarded as on the whole beneficial to the profession (if not to the student).

Table 9.—Students enrolled in schools of architecture in the United States and Canada, 1953–54

Item	United States	Canada
Schools reporting	64	5
New professional students	3, 362	180
Candidates registered for:		
First professional degree	11, 148	581
Second professional degree	205	8
Nonprofessional students taking courses	6, 611	208
Students graduated with:		
First professional degree	1, 616	95
Second professional degree	150	5

Admission Requirements

The great majority of the collegiate schools of architecture admit students who have been graduated from secondary schools, but the entrance requirements are far from uniform. Privately controlled institutions generally limit enrollment, and they are selective in terms of rank of the applicant in his secondary school and other qualifications. Publicly supported institutions, with few exceptions, can be selective only in terms of required secondary school credit in certain subjects. Subject requirements are shown in table 10.

Additional entrance requirements such as aptitude tests, interviews, and entrance examinations are reported in many institutions. Some publicly supported schools state that, although they are not permitted to be selective, they can effect desirable voluntary screening by these means.

Preprofessional education in a college of liberal arts is a prerequisite for admission in 14 schools of architecture, as follows: (a) *1 year*—Universities of Minnesota, Utah, and Virginia, and State College of Washington; (b) *2 years*—Universities of California, Florida, Detroit, and Washington, and Columbia, Stanford, Princeton, and Yale Universities; (c) *4 years* (degree)—Harvard University and Cranbrook Academy of Art.

Table 10.—Secondary school credits required in certain subjects for admission to schools of architecture

Subject	Schools of architecture reporting the requirement	Average number of secondary school units required
Mathematics	59	1.84
English	37	3.27
Sciences	23	1.4
Foreign languages	13	2.0
History	11	1.09
Civics/social studies	5	1.75
Drawing	2	1.0

The Curriculum and Degrees

The great majority of the collegiate schools of architecture offer a 5-year curriculum. A curriculum of this length has been required for accreditation by the NAAB since 1950.

A typical curriculum in architecture now includes the following subjects:

1. Subjects of general educational value and as prerequisites for technical and professional courses: English, mathematics, physics, chemistry, sociology, and economics. Others sometimes included are history, philosophy, and biological sciences. Some elective courses may also be taken.

2. Technical subjects: Mechanics and strength of materials, structural theory, construction (wood, steel, masonry, reinforced concrete), mechanical equipment (heating, ventilation, air conditioning, conveyance, electrical, sanitation, illumination, acoustics), and graphics (instrument and freehand drawing, descriptive geometry, and perspective).

3. Professional subjects, some of which have also general educational values: Design, theory of design, history of architecture, professional practice and ethics, specification writing, office management and contracts, working drawings, model making, modeling and sculpture, and thesis. Electives include art history, archeology, and esthetics.

In general, the straight 5-year curriculums fall into two groups: The integrated curriculums and the divided, or upper and lower division, curriculums. In the former, the general, technical, and professional studies are distributed through 5 years on the assumption that the professional and skill courses are better taught in a longer sequence and that the more mature upperclassman gains more benefit from his courses in economics or philosophy. The proponents of the 2-plus-3 schedule claim the advantages of self-screening in the first 2 years, easier acceptance of transfers or junior college graduates, and intensive coordination of professional and technical work in upper 3 years.

The degree conferred for completion of the professional curriculum in architecture is usually bachelor of architecture, but a very few schools—only 5 of those that are accredited—confer the degree of bachelor of science in architecture. The University of California and the Virginia Polytechnic Institute grant a bachelor of science degree at the end of the fourth year and a master's degree in architecture at the end of the fifth year, but the latter degree in these institutions is considered by the National Architectural Accrediting Board as equivalent to a bachelor's degree in architecture. The number of degrees conferred in recent years is shown in table 11.

Harvard and Princeton permit telescoped schedules for their own general college undergraduates (including those at Radcliffe College) who begin professional studies in third or fourth year which apply as bachelor of arts degree credits, Princeton's first professional degree being master of fine arts at the end of the sixth year. This combination liberal arts and professional degree schedule is possible in most schools as a special curriculum. Yale and the Massachusetts Institute of Technology are cultivating this combination with some liberal arts men's colleges.

A few schools of architecture offer technical institute type courses in such fields as drafting and specification writing. Degree curriculums are sometimes offered in such fields as industrial design, interior decoration, city planning, and landscape architecture. A considerable number of schools offer to nonprofessional students such courses as the appreciation of architecture, history of architecture, and housing and home planning.

Graduate Work

A limited amount of graduate work is offered in architecture and closely related fields. For the academic year 1952–53, 22 schools of architecture reported that they conferred a total of 193 master's degrees and a total of 4 doctor's degrees. (See table 11.) During the 6 years 1947–48 through 1952–53 a total of 11 doctor's degrees were conferred:

Table 11.—Earned degrees conferred in architecture, 1947–48 through 1952–53

Year	Bachelor's and first professional degrees	Master's and second professional degrees	Doctor's degrees
1947–48:			
Men	943	149	2
Women	131	7	----------
Total	1,074	156	2
1948–49:			
Men	1,506	154	2
Women	122	10	----------
Total	1,628	164	2
1949–50:			
Men	2,441	159	1
Women	122	7	----------
Total	2,563	166	1
1950–51:			
Men	2,556	189	2
Women	88	14	----------
Total	2,644	203	2
1951–52:			
Men	2,098	230	----------
Women	112	10	----------
Total	2,210	240	----------
1952–53:			
Men	1,937	185	4
Women	108	8	----------
Total	2,045	193	4

Source: Compiled from annual reports of earned degrees made by the Office of Education.

7 by Harvard University, 2 by Princeton University and 1 each by Columbia and Cornell Universities.

A survey made in 1950 resulted in the data shown in table 12.

Only a few schools of architecture have well organized graduate programs. Work for the master's degree often represents a shift from architecture to city planning or from architectural engineering to research. The few doctorates are usually taken under a nonarchitectural faculty in such subjects as history, esthetics, theory of design, and engineering.

Graduate work is pursued by students who are preparing to engage in research or to teach. Very few practitioners of architecture engage in graduate study: the 3-year internship essential for practice is a deterring factor in the development of graduate work for them.

The lack of graduate degrees, especially the doctorate, puts the architect at a considerable disadvantage in case he seeks advancement in academic rank or in position in a governmental agency. It may be noted that currently only two deans of schools of architecture hold earned doctorates and that one has no degree. Many full professors hold only bachelor's degrees, and some have no degrees.

Until very recently the winning of the Rome Prize or the Paris Prize, with consequent study at the École des Beaux Arts (diploma—Architecte Diplôme pour le Gouvernement Français), or the American Academy in Rome (no degree—entitled to Fellow of the American Academy in Rome) carried much more prestige than a doctorate. Although the luster of these two top prizes has become somewhat dimmed, the winning of one of them, or one of the lesser traveling fellowships attached to particular schools, carries greater weight with the profession than does advanced academic work.

Postgraduate Offerings

Although the American Institute of Architects survey reveals that a high percentage of registered architects have improved their competence by post-college studies in many professional and related specialties, it is known that this was done on an individual basis under a variety of auspices. Within the past decade there has been a marked upsurge of educational activities among the practicing architects which has been stimulated and fostered by the

Table 12.—Second degrees offered by schools of architecture and numbers of candidates for the degrees, 1950

Second degree	Number of schools offering the degree	Number of candidates for the degree
Architecture:		
M. Architecture	22	90
M. S. in Architecture	3	23
M. A. in Architecture	1	6
M. A.	1	0
Ph. D.	1	1
City planning:		
M. Town Planning	1	0
M. City Planning	1	4
M. Science	1	4
M. Regional Planning	1	2
M. City and Regional Planning	1	4
M. Community and Regional Planning	1	5
Architectural engineering and building construction:		
M. S. in Architectural Engineering	3	18
M. Architectural Engineering	2	1
M. Building Construction	2	1
Landscape architecture:		
M. Landscape Architecture	1	1

national and staff officers of the AIA and has, for the time being, taken the form of adult education such as seminars, symposia, and lecture series in conjunction with conventions and regular meetings. Consequently there developed a receptive attitude for more intensive special enrollment courses such as institutes or workshops, which will involve more extensively than at present the faculties and facilities of the professional schools. The present scattered offerings of formal postgraduate work are inadequate in terms of the rapid evolution and increasing complexity of practice and the related technologies.

Some Current Problems

Architectural education is currently beset with a number of problems, some of which it shares in common with other forms of professional education. A few of them will be stated briefly.

First, for the good of the profession and the elevation of professional education in architecture there should be greater selectivity in admitting new students. To admit large numbers of students without screening them carefully lowers the achievement of the professional school, wastes its energies on the incapable, and often does much damage to students who are cast out as failures.

A few schools of architecture employ ways and means beyond the general tests in the university admission procedure to evaluate their applicants. The group as a whole needs to take steps in that direction. Several other forms of professional education have had considerable success with aptitude tests and psychological examinations. Some arrangement with the Educational Testing Service or some other testing agency to develop screening techniques for architecture might well be made.

A 2-3 curriculum plan possesses an advantage over the 5-year integrated curriculum in that the preprofessional years, devoted to education in the liberal arts and sciences, can be used both to provide general education and to screen out the students who do not possess the capacities required to learn the profession of architecture and to succeed in practice. The obvious disadvantage in the arrangement is that it differentiates too sharply between liberal and specialized education.

Second, a problem arises in architectural education because only a limited number of secondary school graduates who apply for admission present a sufficient mastery of such disciplines as mathematics and English and adequate intellectual maturity to undertake professional study. This situation is owing in part to the instruction provided in the high schools.

Third, there is need to develop among architectural students and the members of the profession (*a*) greater appreciation and understanding of research and (*b*) ability to engage in research activities. Building, essentially an ancient craft industry, has adopted some elements of modern science and technology but by no means to the same extent as have many other newer industries. A major objective in architecture is to educate leaders who, without neglecting the creative and human aspects, can complete the conversion of building into a 20th century industry in which research is a central basic tool. This objective requires the development of graduate study and training in research, the amount of which is at present very limited. The conduct of research in or by the professional school helps to develop research attitudes on the part of undergraduates who will become general practitioners.

Fourth, a new approach is needed in the teaching of several subjects of the architectural curriculum. Owing to the close relationship between architecture and structural engineering and to the earlier dominating influence of engineering education, physics and chemistry have been taught frequently as introduction and prerequisite to engineering subjects. In architecture they have, therefore, tended to affect design only through the selection of materials and equipment developed by engineer-manufacturers. This relationship may well continue, but other sciences, notably physiology and climatology, should also be included in the curriculum. Moreover, all these sciences should be taught with much direct reference to human reactions and requirements, and thereby as sources of criteria in design. With more precise and workable knowledge of geography and climatology the architect's designs may take greater advantage of the favorable forces of nature.

Instruction in esthetics presents peculiar difficulties because it has remained close to philosophy and has not leaned sufficiently upon the experimental psychologists, sociologists, and others who are pioneering in the development of a rational esthetic. The problem here is to develop and teach a more functional and useful esthetic which is related not only to visual but also to other kinds of physiopsychological satisfactions derived from the total impact of the environment which create the sense of well-being.

Fifth, the great breadth of education and understanding required of one in the successful practice of architecture presents a serious problem. It is acknowledged on every hand that a strictly specialized curriculum as a means of educating the professional architect is not adequate in these times of increasing complexity of life and greater interdependence in human relations. While the technical and professional content is not to be underrated, instruction in other subjects broader in character should also be provided to the end that architects may deal intelligently with matters outside their field and be competent to appraise their professional work in its relation to society and to other professions.

Although most schools are constantly reviewing curriculums and methods, there is a strong feeling that occasional adjustments and internal reforms will not solve the problems of professional education in architecture, the complex of the time span, the professional content, and the general content.[1] It is believed that there should be a reexamination and major reorientation of the whole philosophy and structure of higher education, undertaken seriously, objectively, and cooperatively by educators concerned with administration, the liberal arts, and the professional field. Such a study and program would have as its objective the intent that every degree holder should be educated as well as trained, without further prolongation of the process. It is believed that such a study would find, in the traditions and experience of architectural education, constructive principles potentially beneficial to both professional and general higher education.

Sixth, although the curriculum titled "architectural engineering" and the degree "architectural engineer" have been used for half a century, there is increasing dissatisfaction with them on the part of both architectural and engineering boards of accreditation and licensure. As hybrid terms, they are a source of confusion. Until very recently the National Architectural Accrediting Board would not consider for accreditation curriculums titled "architectural engineering," even though some of them are almost identical with some programs in architecture. Officially, 19 such curriculums are now accredited by the Engineers Council for Professional Development, the engineering accreditation body, but only on the basis of their engineering content.

The confusion is due in some instances to semantics. It would be well not to employ the terms architectural engineering and architectural engineer and to use only the terms architecture and engineering as denoting two different types of activity. In some instances, the term "architecture-structural option" has been adopted for the erstwhile architectural engineering curriculum, which leads to the degree bachelor of architecture. The University of Illinois, the first institution to grant the degree in architectural engineering, has recently adopted the term "architecture-engineering option" leading to the degree bachelor of architecture. Training for structural engineering or building contracting might well be titled "building technology" or some similar title, omitting the word architecture, and continue under engineering accreditation.

Seventh, in architectural as in other forms of professional education, an ever-present problem is to obtain a sufficient number of competent and inspiring teachers, for they are either the bottleneck or the key to the desired result. Schools of architecture compete for staff with the practicing profession. Only as there is an enhanced appreciation of the importance of the profession to society and of the teachers who train the required personnel will the financial support be provided to attract talented professional men into teaching and retain them in academic positions of prestige and dignity. For the schools the problem is also one of providing some training in the art of teaching, both for those who will be the future teachers and for those who are now members of their faculties. The Association of Collegiate Schools of Architecture has only begun to deal with this problem by holding seminars on teaching methods in the several subject matter fields.

Schools of Architecture

This list includes 59 member schools of the Association of Collegiate Schools of Architecture as of October 15, 1954, and 10 nonmember schools which offer courses or curriculums in architecture.

The asterisk (*) denotes accreditation by the National Architectural Accrediting Board. This board's activities do not extend to Canada. The numbers following the names of the schools indicate the enrollment of students in degree curriculums during the year 1953–54. The first number indicates enrollment in the curriculum leading to the first professional degree; the second number indicates enrollment in curriculums leading to graduate degrees.

ALABAMA

Alabama Polytechnic Institute, School of Architecture and the Arts,* 207, 0

Arkansas

University of Arkansas, College of Arts and Sciences, Department of Architecture, 75, 0

California

California State Polytechnic College, Engineering Division, Department of Architectural Engineering, 160, 0

Stanford University, Department of Art and Architecture, 72, 0

University of California, School of Architecture,* 300, 1

University of Southern California, School of Architecture,* 404, 2

Colorado

University of Colorado, College of Engineering, Department of Civil and Architectural Engineering, 122, 0

Connecticut

Yale University, School of Fine Arts, Department of Architecture,* 83, 14

District of Columbia

Catholic University of America, School of Engineering and Architecture, Department of Architecture,* 144, 4

Howard University, School of Engineering and Architecture, Department of Architecture,* 101, 0

Florida

University of Florida, College of Architecture and Allied Arts,* 511, 9

University of Miami, Department of Architectural Engineering, 154, 0

Georgia

Georgia Institute of Technology, School of Architecture,* 244, 4

Idaho

University of Idaho, College of Letters and Science, Department of Art and Architecture, 47, 0

Illinois

Illinois Institute of Technology, Division of Engineering, Department of Architecture,* 152, 7

University of Illinois, College of Fine and Applied Arts, Department of Architecture,* 970, 22

Indiana

University of Notre Dame, College of Engineering, Department of Architecture,* 164, 0

Iowa

Iowa State College, Division of Engineering, Department of Architecture and Architectural Engineering,* 218, 3

Kansas

Kansas State College, School of Engineering and Architecture, Department of Architecture and Allied Arts,* 167, 4

University of Kansas, School of Engineering and Architecture, Department of Architecture,* 234, 2

Louisiana

Tulane University, School of Architecture,* 145, 0

Massachusetts

Harvard University, Graduate School of Design, Department of Architecture,* 100, 15

Massachusetts Institute of Technology, School of Architecture and Planning,* 124, 26

Michigan

Cranbrook Academy of Art, Department of Architecture, 0,

University of Detroit, College of Engineering, Department Architectural Engineering, 219, 0

University of Michigan, College of Architecture and Design, 263, 7

Minnesota

University of Minnesota, School of Architecture,* 119, 0

Missouri

Washington University, School of Architecture,* 155, 0

Montana

Montana State College, Division of Engineering, Departmen Architecture, 73, 0

Nebraska

University of Nebraska, College of Engineering and Archit ture, Department of Architecture,* 129, 0

New Jersey

Princeton University, School of Architecture,* 92, 0

New Mexico

University of New Mexico, College of Engineering, Departme of Architectural Engineering, 37, 0

New York

Columbia University, School of Architecture,* 156, 11

The Cooper Union Art School (not degree granting), 111, 0

Cornell University, College of Architecture,* 167, 2

Pratt Institute, The Art School, Department of Architectur 237, 0

Rensselaer Polytechnic Institute, Division of Architectur 147, 5

Syracuse University, College of Fine Arts, School of Archite ture,* 142, 0

North Carolina

North Carolina State College, School of Design, Departme of Architecture,* 206, 0

North Dakota

North Dakota Agricultural College, School of Engineeri Department of Architecture and Architectural Engineeri 76, 0

Ohio

Miami University, School of Fine Arts, Department of Archi tecture,* 93, 0

Ohio State University, School of Architecture and Landsca Architecture,* 180, 0

Ohio University, College of Fine Arts, Department of Archi tecture, 24, 0

University of Cincinnati, College of Applied Arts, Departme of Architecture,* 330, 0

Western Reserve University, School of Architecture, 90, 1

Oklahoma

Oklahoma Agricultural and Mechanical College, School of Arc itecture and Applied Art,* 176, 4

University of Oklahoma, School of Architecture,* 235, 7

Oregon

University of Oregon, School of Architecture and Allied Arts, 201, 6

PENNSYLVANIA
- Carnegie Institute of Technology, College of Fine Arts, Department of Architecture,* 166, 0
- Pennsylvania State University, School of Engineering, Department of Architecture,* 150, 1
- University of Pennsylvania, School of Fine Arts, Department of Architecture,* 213, 5

RHODE ISLAND
- Rhode Island School of Design, Department of Architecture,* 50, 0

SOUTH CAROLINA
- Clemson Agricultural College, School of Engineering, Department of Architecture,* 158, 3

TEXAS
- Agricultural and Mechanical College of Texas, School of Engineering, Department of Architecture,* 316, 3
- Rice Institute, Department of Architecture,* 95, 1
- Texas Technological College, Division of Engineering, Department of Architecture and Allied Arts, 143, 0
- University of Houston, College of Engineering, Department of Architecture, 186, 16
- University of Texas, School of Architecture,* 421, 11

UTAH
- University of Utah, College of Applied Arts, Department of Architecture,* 115, 0

VIRGINIA
- Hampton Institute, Division of Technology, Department of Architecture and Engineering, 23, 0
- University of Virginia, College of Arts and Sciences, Division of Architecture,* 102, 0
- Virginia Polytechnic Institute, Department of Architecture,* 132, 0

WASHINGTON
- State College of Washington, College of Engineering, Department of Architectural Engineering, 113, 0
- University of Washington, School of Architecture,* 209, 0

CANADA
- École des Beaux Arts de Montreal, 68, 0
- McGill University, School of Architecture, 115, 1
- University of British Columbia, Department of Architecture, 80, 0
- University of Manitoba, School of Architecture, 111, 6
- University of Toronto, School of Architecture, 207, 1

Total enrollment	*United States*	*Canada*
Undergraduate	11,148	581
Graduate	205	8
Total	11,353	589

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6. Education for Business Administration

By RICHARD L. KOZELKA*

ONE of the oldest of the arts and the youngest of the "professions," as defined by the late President Lowell of Harvard, aptly describes the present dilemma and challenge of professional education for business. Business is an all-pervasive activity in modern society, and its many services demand a wide variety of levels and types of talent. The rapid expansion in scope and complexity in business in the last two generations has created the need for people specially trained in business administration and the several specialties into which it has been divided.

General Evolution of Business

Some elements of "business" have entered into the relation between men since the time when they began to exchange goods and services. As long as these relations remained simple, the business side of a transaction was quite incidental to the more tangible results of the efforts of the artisan, the farmer, the artist, and the sailor, to mention only a few. As business became more complicated with advances in the arts, higher specialization, and higher standards of living, the size of the average business unit increased. There are still many "one-man shops" in industry and trade, and this situation will probably continue as long as freedom of entry is safeguarded and the initial investment is not too great. However, the great bulk of the gross national product of goods and services comes out of business units which represent substantial aggregations of personnel and investment, which must be integrated into an effective and productive mechanism. Such a typical modern business unit must be directed by someone who has mastered the art of business administration.

The primary function of the business enterprise is to produce goods or services. Normally this involves members of the arts and professions, the engineer, the artist, the skilled tradesman. When several of these are working in one enterprise, one of them may quickly recognize the need for direction and control, and develop a capacity for business administration. As his business grows, he will bring in or develop assistants and specialists to interpret the market, distribute the product, and divide the proceeds among the participants. There is no exclusive path to, or method of training for, business administration. Top executives may come from the most unlikely sources. However, there is an unmistakable and increasing trend toward specialized and professional training at the various levels for specialized and managerial functions in business.

Whether business management in its various specialties merits the title of "profession" is a moot question. Whether the problem of operating a business unit in an increasingly complex society deserves the professional type of patient, objective, and pitiless research is much less subject to debate. Furthermore, the attitudes of the new generation of enlightened businessmen toward their responsibilities to society compare favorably with the principles of social responsibility espoused by the older established professions.

Number of Persons

Any estimate of the number of persons in business would be rather meaningless. In a sense, it involves all of those who offer a commodity or service for sale. An outside figure for this would be the total number of gainfully occupied persons, which would be about 42 percent of the population. This report is concerned primarily with those specialties and levels of responsibilities for which professional training in institutions of higher learning yields a distinct personal and social advantage. It is not possible to estimate even this limited figure because the gross figures of the census do not permit a meaningful differentiation. However, some clue to the rapidly rising importance of professional preparation in business is given in the increasing enrollments in professional schools to be indicated later.

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Licensure

One of the distinguishing characteristics of a profession which has "arrived" is a system of licensure, presumably established to protect the public interest. By this criterion business has hardly approached the threshold of professional acceptance. There is no licensing per se for business managers. Licenses are required for certain specialized business services. In all States accountants must have a license if they wish to practice as Certified Public Accountants. In many States formal training in accounting in professional schools is recognized among the qualifications of the applicant for such a license. In many States real-estate brokers and security dealers may operate only under a license. To be sure, certain kinds of business must obtain a charter, such as banks and public utilities, or must obtain licenses under local police power, but these are not related to questions of professional competence and the training necessary for such business.

Professional Organizations

The number of organizations in business is legion; it is said that the businessman has a propensity for "joining." In addition to over-all organizations, such as the United States Chamber of Commerce and the National Association of Manufacturers, there are hundreds of trade associations that seek to improve the position of their own special areas. It is a short step from the trade association to organizations of a professional or semiprofessional nature in business. There are organizations available to appeal to almost any specialty, including many subdivisions. Examples of these are the American Marketing Association, the National Association of Life Underwriters, the American Institute of Accountants, the National Sales Executives Association, and the National Association of Cost Accountants. In the general field of management there are the American Management Association and the Society for the Advancement of Management. Some of these organizations carry on extensive research programs and take a vital interest in educational programs in preparation for their profession. In addition to the national organizations there are State and local units in the same specialties.

Evolution of Education for Business

The main stream of the present curriculum of professional education in business rises from many sources, but the two primary tributaries have been the classical field of economics and the vocational field of bookkeeping. The traditional birth year of classical economics is 1776, the publication date of Adam Smith's *Wealth of Nations*. Under a rapidly developing economy, both in England and elsewhere, in the 19th century this simple elementary course of economics branched out into many specialties, such as monetary theory, international trade, fiscal policy, labor theory, and economic fluctuations.

It was a short step from the study of theory to its applications, particularly as the study turned from the nation as a unit to its component parts, and ultimately to the business unit. The need for tools for both internal and external measurement was recognized at an early stage, and some attention was given to statistics and accounting. If the complexion of the faculty strongly favored the "applied" side of economics, it was easy to add a few "practical" courses and, with proper encouragement from university administration and business friends, establish a school of business administration. This was particularly true on the campus of a university which had a strong tradition of professional schools. There was more resistance to the establishment of such a school in colleges or universities where there was a strong liberal arts tradition. In some universities the department of economics was the strong nucleus of the school of business administration and remained within it. At other universities there was a separation. The practical side of economics was augmented and became the nucleus of the school of business administration, while the theoretical side remained as a department among the social sciences in the liberal arts component of the university.

The development from the technical side may be said to have begun in the "business colleges" for penmanship, bookkeeping, and secretarial training at the secondary school level in the latter half of the last century. This kind of training entered the public high schools as secretarial and bookkeeping training about the same time, but really flourished only after 1890. However, before this, instruction in bookkeeping progressed into more advanced phases of accounting and finance, which merited attention well above the secondary school level. Need for this more advanced instruction appeared first in the major metropolitan centers and was met primarily by night school programs. Some of the largest of the present schools of business administration have their major enrollment in part-time students studying at night.

The merging of these two streams of development has resulted in schools with varying emphases on the applied and specific, bordering on the vocational, and the general or theoretical, with major attention to the long-range and the over-all aspects. This is not to suggest that training for business is given exclusively in schools of business administration. The problems of business administration are also being approached from the engineering side, through courses and departments and even schools of industrial engineering; and from political science, where the emphasis may be laid on public administration.

A special phase of development of education for business administration is the professional school at the post baccalaureate level. It usually carries the title of "graduate school," but the emphasis is not on graduate training based on an undergraduate major in business. The primary purpose is to serve the student whose baccalaureate degree was earned in other fields, such as in liberal arts, engineering, or law. These schools tend to emphasize the managerial function, rather than the highly specialized applications.

Surveys and Studies

The field of education for business administration has been examined from time to time, but never with the thoroughness which has marked the surveys in other professions, such as medicine, pharmacy, engineering, and law. Attempts have been made to obtain financial support for an adequate study, comparable to the scope of the studies of other professions, but without success.

Limited surveys have been made, which have been very useful to faculties and administrators. The report of the first major survey appeared in the golden anniversary year of the first school of business administration, the University of Pennsylvania Wharton School of Finance and Commerce, and was titled *University Education for Business*[1]—a study of existing needs and practices, by J. H. S. Bossard and J. F. Dewhurst. Surveys of needs and requirements have been launched on a small scale in some of the specialties in the business field.[2] The American Institute of Accountants has appointed a Commission on Standards of Education and Experience for the CPA, which is currently studying the relationship of accounting curriculums to the needs of the profession and to the licensure laws of various States.

Educational Associations

The American Association of Collegiate Schools of Business (AACSB) is the major over-all organization for schools of business administration at the college level, as distinguished from the business colleges at a more elementary level, and from the teachers of business subjects in the secondary schools. The association was organized in 1916. It has a membership of 76 schools, and is host to at least an equal number of representatives of nonmember schools at its annual convention, when common problems are discussed. Membership is on an institutional basis, and schools are usually represented by deans, although faculty members are frequently in attendance.

Organizations of specialties within the field of business are numerous, based, usually on personal membership of teachers and directors within the special areas. Among these are the American Accounting Association, American Association of University Teachers of Insurance, American Business Law Association, the Academy of Management, American Collegiate Retailing Association, American Finance Association, American Marketing Association, and the Associated University Bureaus of Business and Economic Research.

The AACSB and several of these specialized organizations have joined in a Council for Professional Education for Business. The purpose of the council is to study the common problems of the profession, to emphasize the interrelations of the specialties, and to strengthen the standards of good training and education in this new profession.

Accreditation

Accreditation was not part of the original intention in the establishment of the AACSB. It was only an association of the pioneers who recognized the problems and weaknesses of the new type of professional education. Early in the life of the association, certain standards of excellence were established for the guidance of its own members, and to demonstrate to the other units on the university campus the claim to usefulness and academic respectability of the newest of the professional schools. Over the years, additional schools have been received into membership, subject to meeting the standards, which have been reviewed and revised periodically. Without seeking the responsibility, the association has become the de facto accrediting agency in its field, through recognition by other agencies, such as the Veterans' Administration, and the Office of Education, U. S. Department of Health, Education, and Welfare.

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[1] University of Pennsylvania Press, Philadelphia, Pa., 1931.

[2] As an example, Philip H. Kreidt and Margaret Benson, *Jobs in Industrial Relations.* Minneapolis, Minn., Industrial Relations Center, University of Minnesota, 1947. Bulletin 3.

Schools

The Wharton School of Finance and Commerce is recognized as the first school of business administration at the college level. It was established in 1881, and had no rivals until 1898, when the universities of Chicago and California established schools. Thereafter the number increased rapidly.

The total number of schools offering business curriculums at present is hard to determine because programs range from those of the autonomous professional school in a university to the modest, but ambitious, offering of a few "applied" courses in a department of economics and business in a liberal arts college. The best, though highly informal, count is the biennial survey of organized curriculums in business administration by H. G. Wright, executive secretary of Delta Sigma Pi, professional business fraternity.

The latest (1954) survey lists 173 undergraduate and 6 graduate schools of business administration of which 76 are members of the AACSB. The undergraduate schools are predominantly 4-year schools. There are 131 programs which enroll freshmen, 9 which begin with sophomores, and 30 which begin with the junior year. There are 9 which cover 5 years, including a work-study program or an evening study program. The 6 graduate schools are on a 2-year basis, although in several cases, such as Chicago and Dartmouth, this time may be cut in half by an appropriate combination with the final year of the undergraduate program. Many of the undergraduate schools also offer a graduate program, which may be administered independently or through the graduate school. Of the 179 schools mentioned; 76 have evening divisions.

Education for business is not limited to the schools described above. There are autonomous schools in specialized areas at the college level, such as the School of Industrial Relations at Cornell, the newly established schools of industrial administration at Carnegie Institute of Technology, and at Massachusetts Institute of Technology, and the schools of retailing at the University of Pittsburgh and at New York University. At more elementary levels, instruction is offered in organized programs at junior colleges, private business colleges, and commercial high schools, but these programs are beyond the scope of this paper.

Enrollment

The trend toward college education for business is indicated in the enrollments in this field as shown in table 13. The table is subject to statistical imperfections due to difficulties of comparability over a long period, but the growth is unmistakable. The effect of acceleration under the pressure of the postwar rush of veterans is apparent in the high proportion of the total number of degrees which were granted in 1949 and 1950 in commerce and business. This reflects in part the elasticity of staff and facilities in teaching business administration (probably at some expense in quality) as compared to other professional schools which are limited by laboratory and clinical facilities.

Table 13.—Total undergraduate enrollment and undergraduate enrollments in commerce and business in institutions of higher education at 10-year intervals, 1910–50

Year ending	Total undergraduate enrollment	Undergraduate enrollment in commerce and business	Percent enrolled in commerce and business
1910	355, 213	4, 321	1. 2
1920	597, 880	36, 855	6. 2
1930	1, 100, 737	59, 436	5. 4
1940	1, 494, 203	109, 002	7. 2
1950	2, 659, 021	204, 240	7. 5

Source: Office of Education, Annual Reports and Biennial Survey of Education.

Admission Requirements

The acceptance of the principle of a sound mixture of general education with professional preparation has created no special problem for the freshman entering the university with intentions to major in business administration. Normal college entrance qualifications, including the interview where it is required, are sufficient for admission to the school of business administration which is on the 4-year basis.

Schools which are on a 2- or 3-year basis accept students by transfer from a general college or the lower division of the college of liberal arts of the university, or from independent institutions of higher learning, such as junior colleges and liberal arts colleges. These transfer students may be accepted without reference to pattern, except that it be in the liberal arts tradition. However, there has long been a tendency to prescribe certain basic "preprofessional courses," such as accounting and principles of economics, to be taken before admission into the professional school. The number and kinds of such preprofessional courses required have been a subject of experiment and discussion for many years.

As in other professions, there is considerable discussion of the desirability of a liberal arts degree as the only appropriate foundation for a professional education. Law schools have moved in this direction, and medical schools have recommended it, in spite of the obvious extension of the formal learning process. Harvard, Stanford, and recently Columbia, are the leading examples of schools requiring a bachelor's degree (not necessarily in liberal arts) for admission, since they are on an exclusively postbaccalaureate basis.

Professional Curriculum and Degrees

The curriculum for the bachelor's degree in business administration has been a working compromise between the demands of specialization and of broad basic training. To achieve respectability as a new member of the university family, the school of business administration had to eschew courses which were "too vocational." Part of the delay in the development of sound professional courses was due to the lack of research and adequate university-level material, as well as a lack of competent teaching personnel with a true professional viewpoint. Part of the delay was due to uncertainty over what was needed for maximum service to a rapidly growing market.

The pressure for more training, particularly in such special areas as accounting, has posed the problem of an earlier start versus expansion beyond the 4-year pattern. The AACSB has resisted the encroachment of professional training on general education by holding its members to a minimum of 40 percent of the 4-year program to be spent on nonprofessional training. Much of this training is received in the first 2 years of college experience, whether the student is enrolled in the liberal arts college or in the school of business administration.

The pressure for specialization is still heavy, but the answer is sought in extended programs, rather than at the expense of the liberal arts component or the broad fundamental business courses in the required curriculum. The extension may be into the graduate level, although there has been some discussion of following the trend in engineering toward 5 years for a bachelor's degree. There is rather general agreement on certain "core" elements, such as economic principles, accounting, statistics, finance, and management in all curriculums.

Surveys taken among business executives and in specialized areas indicate the need for maintaining breadth of view in the curriculum, to understand the several functions operating in a business enterprise and to see the relation of the business unit to the economy. The fluidity of graduates between jobs, as revealed by alumni studies, gives pause to a high degree of specialization in the curriculum, lest the graduate should suffer a handicap in initial placement, or in his adaptability to new opportunity. There is full recognition of the place of evening classes and "corporate" schools in the transmission of highly specific skills and information which may be put to effective use concurrently or immediately following the classes, under more favorable conditions of motivation.

Among the problems which are being studied by curriculum committees are courses which give orientation to the new student of business, and courses which help him to understand the social and political environment in which business operates. The introductory course in business is the subject of experiment in many universities. The profound ignorance of most freshmen of the elementary "facts of economic life" presents a grave problem in the understanding and motivation of the student in his approach to his chosen field. The increasing impact of government on business decisions has led to courses studying this problem, and their inclusion in the degree requirements.

The interaction of business with other professional fields has brought a slow development of joint curriculums more formal than a casual collection of electives. Examples of these combinations are in engineering, law, and pharmacy. This creates problems of adaptation of business courses to the associated professions, but this solution of the problem is usually preferable to overlapping and duplication.

The degree granted for professional study in business administration is not uniform in all schools, but 63 percent of the membership of the AACSB use the bachelor of science, with or without designation in the several specialties. The bachelor of business administration is used by 26 percent of the member schools.[1] The number of bachelor's and first professional degrees conferred in commerce and business in recent years is shown in table 14.

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[1] Louisiana State University, College of Commerce, Division of Research, *Commerce Degrees* (mimeographed), October 1952.

Table 14.—Total number of bachelor's and first professional degrees and number of bachelor's and first professional degrees in commerce and business conferred by institutions of higher education in various years, 1920–53

Year ending	Total bachelor's and first professional degrees	Bachelor's and first professional degrees in commerce and business	Percent of degrees in commerce and business
1920	48, 622	1, 559	3. 2
1930	122, 484	6, 213	5. 1
1940	186, 500	22, 133	11. 9
1948	272, 144	37, 371	13. 7
1949	366, 634	61, 624	16. 8
1950	433, 734	72, 137	16. 6
1951	384, 352	[1] 58, 237	15. 2
1952	331, 924	[2] 46, 683	14. 1
1953	304, 857	[3] 40, 706	13. 4

[1] Divided as: Accounting, 10,766; all other, 47,471.

[2] Divided as: Accounting, 8,551; all other, 38,132.

[3] Divided as: Accounting, 7,371; all other, 33,335.

Source: Office of Education, Annual Reports and Biennial Survey of Education.

Graduate Study

For some years a sizable number of graduate students have been enrolled in commerce and business administration. A total of 4,794 were reported in 1939–40 and 12,788 in 1949–50. The numbers of graduate degrees reported since 1948 are shown in table 15.

Table 15.—Graduate degrees granted in commerce and business administration, 1948–53

Year ending	Master's and second professional	Doctor's
1948	2, 314	41
1949	3, 897	29
1950	4, 335	58
1951:		
Accounting	492	9
All other	3, 863	56
1952:		
Accounting	585	7
All other	3, 241	85
1953:		
Accounting	557	21
All other	3, 478	88

Source: Office of Education, Annual Reports and Biennial Survey of Education.

The graduate curriculums are of two general types—the specialized and the general management. As a particular field expands in complexity and content, additional training becomes necessary to achieve minimum competence, and this can be accomplished only by post baccalaureate work if there is to be no sacrifice of the broad fundamental training. The general management curriculum is offered by schools such as Harvard, Stanford, and Columbia, which specialize in students who have earned a degree in a field outside of business. In this case, the curriculum is planned to lay the necessary groundwork by intensive methods, together with a pattern of courses which stress the management factor in business operations. Some schools offer both types of program, differentiating them in the degree which is conferred, the master of business administration (M. B. A.) for the latter, and the master of science in business (M. S.) for the former.

Graduate work beyond the master's degree is offered in half of the member schools of the AACSB. Traditional nomenclature prevails and the Ph. D. is conferred generally without designation. Only three schools offer the doctor of commercial science (D. C. S.) Although the Ph. D. in business administration is offered by half of the schools with graduate programs, the output is far short of meeting the needs of faculty recruitment. Candidates are drawn from the ranks of Ph. D.'s in economics, but without satisfying all the needs of the specialties.

Continuing and Adult Education

Degree programs are the major responsibility of the present professional schools of business administration, but these are not the only educational activities beyond the secondary school level. Even as some of the early programs were designed to meet specific needs in adult education, rather than a degree objective, so today this demand for specialized training remains important. The correspondence course, the evening course, the extension course, under university auspices, advance the professional skill and competence of the individual who is interested in a limited objective, or unable to pursue a complete and formalized program.

A fairly recent development in professional education for business is the short, intensified program prepared for executives or potential executives, who are released temporarily from their business responsibilities for a period of 2 to 10 weeks. Some of these programs are along highly specialized lines, such as finance, while others emphasize the problem of over-all executive development. These courses have borrowed techniques of instruction and materials from both the traditional, full-term courses of the degree candidate, and, at the other extreme of time, from the very short "refresher" type of conference of 2 or 3 days, which is conducted under university auspices for specialized groups in all fields, as a public service.

Problems

A new and rapidly developing field of professional education cannot escape growing pains. Education for business administration has its share of problems which are under continual study and experimentation. The solutions seem to be as elusive as they are for other professional areas, but the efforts of faculty and administrators only intensify as another bulge in enrollment appears ahead. The following summary of problems is a partial list of subjects under constant discussion at meetings.

Selection and recruitment of students.—The testing and selection of students most likely to succeed in business are in such an elementary state that test scores are not very helpful in counseling students before admission. Aside from the uncertainties of definitions of success, there is much work to be done in defining the qualities desired, and in preparing valid tests which uncover these qualities. Test programs have been tried for accounting and advertising, both at the entrance level, and at various stages of progress. High school scholastic records alone are not an adequate forecaster even of scholastic success in the school of business administration, let alone practical success in the business world.

The transfer of students from junior colleges and liberal arts colleges into the professional business program after 1 or 2 years presents a problem of assimilation and adjustment which is only partly curricular. The difference in size of institution, in educational pace, in motivation and student attitude leads to unnecessarily high scholastic mortality. Can articulation of the college program with the professional program be achieved without sacrifice of the objectives of general education, or dilution of professional education?

Curriculum.—The conflict between specialization and general management training is unavoidable in such a dynamic field as business. The growth and addition of new fields enrich the materials available for formal training and create pressures for new courses and specialized curriculums. The choice made by each school depends in part on its location and its primary objective. The result may be a movement toward a 5-year program in certain specialties or toward a graduate program. There is general agreement on the necessity for a foundation of general education or humanities, but this must be safeguarded from erosion by the insistent demands of the specialists. The growth of specialized associations within business will increase the demands for fragmentation in the curriculum.

There is wide recognition of needs in preparation for business which lie outside the normal business curriculum. Skill in communication is stressed by business executives as a basic need which is not met adequately in most schools. The deficiency is decried in all professions, which does not make its removal less difficult in business. Tailor-made English courses are used with partial success.

Faculty.—There is a dearth of faculty who are adequately trained in the objective scientific approach to business problems and who also have had responsible business experience which helps to give validity to their teaching. The evaluation of business experience in the qualifications of a faculty member of a school of business administration is exceedingly difficult in the recruitment and advancement of faculty. There is a strong temptation to lean too heavily on part-time faculty drawn from the practitioners in the community. An opportunity for intensive study and vicarious experience in certain corporations is developing through the awarding of summer fellowships to members of the faculty of the school of business administration as well as to those in other units of the university.

Teaching and teaching methods.—The teaching of business administration and business methods has been marked by lengthy discussion of the case method since Harvard adopted this approach shortly after World War I. Unnecessary time was spent on the dissimilarities between the case method as used in law schools and as used by the Harvard Graduate School of Business. More fruitful discussion centered on the high expense of collecting case materials, the method of preparing the case for class, the level of maturity necessary to make this method profitable to the student, and the optimum class size. The discussion is still going on as schools of business experiment with the method and with the case books as they appear. The method has been adopted in limited and modified form in many schools.

The "work-study" program has been the subject of study, debate, and experimentation by schools of business since World War I. It is an attempt to gain some of the teaching benefits of the apprenticeship system of the vocations and trades, and the internship program of the medical profession. The University of Cincinnati and City College of the City of New York have the most extensive programs of this type in business administration. It is used on a more limited scale in many schools for special subjects, such as accounting, retailing, and secretarial training. Many problems have delayed the wider adoption of the plan, such as the attitude of the faculty; the relative inflexibility of the semester plan; the questions of compensation, liability, and union contracts within a company; and the cost of field staff to administer the program. Some faculty members in universities with extensive evening-school programs contend that many equivalent values of the work-study program, such as motivation and self-support, are present in night school teaching. However, the work-study balance in such a situation is admittedly somewhat distorted, and supervision of an organized pattern of experience is difficult.

Community service.—A professional school owes an obligation to the profession it serves as well as to the public, and it must be aware of the problems of practitioners. The school of business administration which takes its obligation seriously feels overwhelmed by the opportunities and invitations for making contacts and serving the business community. These activities usually begin as extracurricular additions to a full teaching load and soon pose the problem of allocation of resources. The promotion, organization, and staffing of refresher conferences, intensive short courses for management training or special interest groups, extension and branch school courses, not to mention individual research and consultation, create pressures and burdens which may play havoc with the fundamental purpose of the school. Load adjustments, specialized appointments, and adequate assistance may restore the balance, but are not easy to obtain when resources fail to keep up with the growing teaching load. The values of these extracurricular activities, by way of case material, placement opportunities, and research support, cannot be overlooked, but the price is not a trifle.

This brief recital of problems is not complete, but it suggests the challenge in the development of this very young branch of professional education. It is frankly borrowing teaching techniques and curricular principles from the older professions while it reviews its progress critically and pursues research into its needs and objectives. The need for a comprehensive survey of the profession and its education is obvious.

Schools of Business Administration and Enrollments

The names of the schools of business administration which are members of the American Association of Collegiate Schools of Business are shown below. The figures indicate the enrollments in the fall of 1953 as reported to the Office of Education; the first figure indicates the number in courses leading to the first professional degrees, the second figure the number in courses leading to advanced degrees. A total of 11 of the schools listed are associate members.

ALABAMA

University of Alabama School of Commerce and Business Administration, 1,153, 37

ARIZONA

University of Arizona College of Business and Public Administration, 1,113, 25

ARKANSAS

University of Arkansas College of Business Administration, 872, 24

CALIFORNIA

Stanford University Graduate School of Business, 0, 334
University of California (Berkeley) School of Business Administration and University of California (Los Angeles) College of Business Administration, 1,179, 128
University of San Francisco College of Business Administration, 955, 0
University of Santa Clara College of Business Administration, 245, 0
University of Southern California College of Commerce, 1,904, 378

COLORADO

University of Colorado School of Business, 375, 34
University of Denver College of Business Administration, 1,518, 230

FLORIDA

University of Florida College of Business Administration, 448, 52

GEORGIA

Emory University School of Business Administration, 88, 0
University of Georgia College of Business Administration, 3,867, 17

ILLINOIS

Northwestern University School of Commerce, 4,460, 290
The University of Chicago, The School of Business, 442, 35
University of Illinois College of Commerce and Business Administration, 2,735, 126

INDIANA

Indiana University, The School of Business, 1,693, 233

Iowa

Drake University College of Business Administration, 548, 7
State University of Iowa College of Commerce, 363, 101

Kansas

University of Kansas School of Business, 321, 39

Kentucky

University of Kentucky College of Commerce, 781, 26

Louisiana

Louisiana State University College of Commerce, 444, 74
Loyola University College of Business Administration, 290, 0
Tulane University College of Business Administration, 429, 41

Maryland

University of Maryland College of Business and Public Administration, 1,365, 109

Massachusetts

Boston University College of Business Administration, 1,543, 46
Harvard University Graduate School of Business Administration, 1,339, 0

Michigan

Michigan State College School of Business and Public Service, 2,736, 96
University of Detroit College of Commerce and Finance, 1,578, 145
University of Michigan School of Business Administration, 469, 409

Minnesota

University of Minnesota School of Business Administration, 560, 0

Mississippi

University of Mississippi School of Commerce and Business Administration, 617, 31

Missouri

St. Louis University School of Commerce and Finance, 1,055, 56
University of Missouri School of Business and Public Administration, 461, 27
Washington University School of Business and Public Administration, 332, 127

Montana

Montana State University School of Business Administration, 536, 5

Nebraska

The Creighton University College of Commerce, 297, 0
University of Nebraska College of Business Administration, 911, 57

New Hampshire

Dartmouth College, The Amos Tuck School of Business Administration, 68, 0

New Jersey

Rutgers University School of Business Administration, 253, 409

New York

The City College, The Bernard M. Baruch School of Business and Public Administration, 5,702, 922
Columbia University Graduate School of Business, 904, 0
Cornell University School of Business and Public Administration, 105, 0
Fordham University School of Business, 1,414, 0
New York University School of Commerce, Accounts, and Finance, 6,501, 4,399
Syracuse University College of Business Administration, 765, 113
University of Buffalo School of Business Administration, 561, 11

North Carolina

University of North Carolina School of Business Administration, 404, 22
Wake Forest College School of Business Administration, 98, 0

North Dakota

University of North Dakota School of Commerce, 160, 0

Ohio

Bowling Green University College of Business Administration, 873, 7
Miami University School of Business Administration, 1,486, 34
Ohio State University College of Commerce and Administration, 2,954, 144
Ohio University College of Commerce, 794, 4
University of Cincinnati College of Business Administration, 1,126, 0

Oklahoma

University of Oklahoma College of Business Administration, 1,338, 48
University of Tulsa College of Business Administration, 1,097, 18

Oregon

University of Oregon School of Business Administration, 300, 27

Pennsylvania

Lehigh University College of Business Administration, 593, 11
Temple University School of Business and Public Administration, 387, 0
University of Pennsylvania, Wharton School of Finance and Commerce, 560, 0
University of Pittsburgh School of Business Administration, 1,191, 0

South Dakota

University of South Dakota School of Business Administration, 122, 0

Tennessee

University of Tennessee College of Business Administration, 1,302, 114

Texas

Baylor University School of Business, 878, 0
Southern Methodist University School of Business Administration, 357, 50
University of Texas College of Business Administration, 2,369, 165

UTAH
- University of Utah School of Business, 585, 10

VIRGINIA
- University of Virginia, McIntire School of Commerce, 347, 0
- Washington and Lee University School of Commerce and Public Administration, 160, 0

WASHINGTON
- State College of Washington School of Economics and Business, 285, 10
- University of Washington College of Business Administration, 1,747, 96

WEST VIRGINIA
- West Virginia University College of Commerce, 683, 10

WISCONSIN
- Marquette University, The Robert A. Johnston College of Business Administration, 1,093, 8
- University of Wisconsin School of Commerce, 1,584, 80

Total enrollment:

In courses leading to first professional degrees	81,168
In courses leading to advanced degrees	10,051
Total	91,219

In addition to the above-named institutions offering instruction in business administration, 309 other colleges and universities reported 90,054 students in courses leading to first professional degrees and 64 reported 3,251 students in courses leading to advanced degrees.

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7. Chiropody [illegible]ation

By WILLIAM J. STICKEL [illegible]*

CHIROPODY is one of the professions of recent development. Today its practitioners are found in every State and the District of Columbia. More than 300 chiropodists enter the field each year.

Meaning of Chiropody

Chiropody is that specialty of medicine and surgery (an ancillary profession) which is concerned with the care of the human feet, in health and in disease. It consists of the prevention, diagnosis, and treatment of foot disorders by electrical, mechanical, physical, medical, and surgical methods, except amputation of the foot or toes, and includes the nonsurgical treatment of the muscles and tendons of the leg governing the functions of the foot.

The term "chiropody" was first used in 1768 by an Englishman, D. Low, who wrote a treatise entitled "Chiropodologia." A synonym, *podiatry*, common in a few States, came into use in 1917. The words "chiropody" and "podiatry" were derived from two Greek words—cheiro, meaning hand; pous, meaning foot. Originally chiropody was the art of treating diseases of the hands and feet, but today it is confined to treating the feet.

The chiropodist is one of the guardians of public health, and he shares this responsibility with other members of the healing sciences through clinical experience, education, knowledge, skill, and specialization. In treating the lower extremities the chiropodist often finds signs of systemic ailments which are reflected in the feet and legs. Some of these are arthritis, arteriosclerosis, anemia, heart disease, kidney disturbances, and diabetes. The chiropodist is the only practitioner who confines himself exclusively to the care of foot disorders. His practice includes the treatment of skin diseases and infections, shoe therapy, appliance therapy, physical therapy, orthopedic therapy, and surgery.

The [illegible]on

A [illegible] of chiropodists completed by the Natio Asso[illegible] of Chiropodists on January 1, 19 show[illegible]t there were 7,277 licensed practition in th[illegible]ed States. Chiropody is one of the le crow[illegible] the professions concerned with maintai ing pu[illegible]ealth. At present there is approximate one ch[illegible]odist for every 25,000 persons in t United S[illegible]es.' The estimated future need for pra titioners [illegible] an additional 3,000 by 1958 and 5,0 by 1968. The increased demand for profession foot care [illegible]ises because more than 70 percent of t population is afflicted with some type of ailme in the feet.

The practice of chiropody is regulated by law every State and the District of Columbia. Follow ing graduation from a chiropody college, the graduat is required to take a State board examination obtain a license. Such examinations are given the various States by boards of chiropody or medic examiners. Most States also grant reciprocal licens to practitioners previously licensed by examinatio in other States.

The official organization of chiropodists, founde in 1912, is the National Association of Chiropodist Affiliated with it are 49 State societies and sever specialty organizations: American College of Fo Surgeons, American Society of Chiropodical Roen genology, and the American College of Fo Orthopedists.

The official publication of the profession is th *Journal of the National Association of Chiropodist* published monthly. Other publications are th *Chiropody Record* and *Current Chiropody*. Man societies issue regional or local journals.

Evolution of Chiropodical Education

Prior to 1912 chiropodists secured their trainin through the preceptorship system. In that year th Illinois College of Chiropody and Foot Surgery ar the College of Podiatry of Long Island University were founded to teach the basic principles of foot medicine and surgery. The original courses at these institutions were of approximately 6 months' duration. There are now six recognized colleges in the United States. They have a combined enrollment of less than 800 students, and they graduate annually about 300. (See table 16.)

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*Executive secretary, National Association of Chiropodists, Washington, D. C.

All six schools are members of the American Association of Chiropody Colleges, which was organized in 1933.

Table 16.—Students enrolled in colleges of chiropody in stated years and number graduated [1]

Year ended	Students	Graduates	Year ended	Students	Graduates
1913	161	74	1944	997	366
1915	245	128	1945	1,022	324
1920	342	184	1946	1,069	298
1925	694	364	1947	1,143	281
1930	824	258	1948	1,181	368
1935	864	226	1949	1,204	393
1940	1,166	490	1950	1,096	422
1941	1,288	424	1951	1,087	381
1942	1,225	403	1952	945	329
1943	1,205	419	1954	748	--------

[1] In 1913 and 1915 there were 3 colleges, in 1920, 5 colleges, and from 1925 there were 6.

Accreditation

Chiropody colleges are accredited by the Council on Education of the National Association of Chiropodists, which was created in 1918. This body spent 3 years in organizing and formulating rules for its guidance. In 1921 the council proceeded to carry out its functions of regulating chiropodical education and making thorough inspections of the chiropody colleges. There are seven members of the Council on Education, all of whom are elected by the House of Delegates of the National Association of Chiropodists. To insure continuity of activity, two members are elected annually for 3-year terms. At the annual meeting of this body a chairman is elected.

Over the years the regulations of the council have been periodically revised and elaborated into the essentials for classification in keeping with the progress being made in chiropodical as well as professional education in general. Among the important objectives of the council are the standardization of preliminary educational requirements and the revision of the basic 4-year course. All expenses involved in the operation of the council are borne by the National Association of Chiropodists.

Admission Requirements

The academic requirement for entrance to the colleges of chiropody in 1913 was the completion of 2 years of high school or the equivalent as indicated by a qualifying certificate issued by appropriate authorities. The requirement was raised in 1930 to graduation from a 4-year high school, and in 1940 to the completion of 1 year of study in an approved college. Currently four of the colleges require 1 year of college work, the other two require 2 years. Among the college subjects recommended are chemistry, English, biology, and physics.

Professional Curriculum and Degrees

The course of study in the early colleges of chiropody was of 6 months' duration. The time was increased to 9 months in 1916, to 2 years in 1921, to 3 years in 1931, and to 4 years in 1937. Prior to 1931 some of the colleges gave evening courses.

The course of study advocated by the Council on Education of the National Association of Chiropodists (outlined below) comprises a total of 4,160 hours covering a period of 4 years. The curriculums in the schools comprise from 4,200 to 4,400 hours of classroom, laboratory, and clinical instruction.

The principal subjects included in the curriculum are: Anatomy, chemistry, bacteriology, physiology, pathology, materia medica and therapeutics, chiropody, foot orthopedics, physical therapy, diagnosis and chiropodical medicine, dermatology, foot gear, surgery, orthopedic surgery, neurology, psychology, hygiene, roentgenology, and clinical practice. Some time is allowed in the curriculum for cultural subjects.

Upon completion of the undergraduate course, the degree doctor of surgical chiropody (D. S. C.) is conferred by 5 of the colleges; 1 college confers the degree doctor of podiatry (Pod. D.).

Postcollege Study

All of the colleges provide an elective clinical internship for graduates (a fifth year) in order to meet the requirements of certain State practice acts. Emphasis on all phases of clinical practice characterizes this period of special instruction.

The colleges offer advanced courses to graduate chiropodists. Such instruction includes didactic and clinical training in chiropody surgery, mechanical orthopedics, diagnosis, pediatrics, geriatrics, roentgenology, and physical therapy. Certificates are issued upon completion of such work, but the courses do not lead to degrees.

Current Problems

Education in chiropody is confronted with several important problems. Difficulty in securing competent teachers is a decided handicap. The practice of chiropody offers more lucrative economic returns than teaching and discourages good practitioners from associating themselves with the colleges. Despite many efforts to attract and retain able teachers, the problems associated with developing teaching staffs and research personnel are now far from solution. Perhaps greater appreciation by the public of better foot care will eventually result in available funds to make chiropodical teaching a more attractive career.

Another problem which is receiving much attention concerns efforts to enroll students who after graduation will be a credit to the profession and contribute to its advancement.

Several programs are now under way to encourage greater interest in chiropodical research. However, here again lack of needed funds is rather discouraging.

Also among the current problems is the provision for a well-balanced education in keeping with the strict requirements of the profession and with the broad cultural background essential to the modern chiropodist.

Schools of Chiropody and Enrollments

The 1953 fall enrollments of the six accredite schools of chiropody are shown by the following data. The first number represents the total, the second th number of women.

CALIFORNIA
California College of Chiropody, 45, 1.

ILLINOIS
Chicago College of Chiropody and Pedic Surgery, 82, 4.
Illinois College of Chiropody and Foot Surgery, 130, 3.

NEW YORK
Long Island University College of Podiatry, 158, 3.

OHIO
Ohio College of Chiropody, 170, 4.

PENNSYLVANIA
Temple University, School of Chiropody, 140, 8.

Total enrollment, 725, 23

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8. Dental Education

By LLOYD E. BLAUCH*

DENTAL EDUCATION as a well-organized regimen of professional preparation began little more than a century ago. Even as late as 1900 only about three-fifths of the dentists in the United States had been trained in dental schools. In the last 50 years dental education has had a remarkable development. During this period it was incorporated in many of the universities and became a well-recognized university discipline.

Dentistry

Dentistry, in some form, has been practiced for centuries. It was found in all the ancient civilizations. From early times to the present its practice and objectives have passed through various stages. At the beginning the function of the dental art was largely to relieve pain through the extraction of aching teeth. At an early date, however, dentistry developed means for the retention of loose teeth and the artificial restoration of lost teeth. The methods of repair and restoration of teeth have evolved with increasing regard for the esthetic and functional aspects of the service. Later the correction of irregularities in the position of teeth and the conservation of teeth by limiting the decay of defective teeth became common objectives. In addition to the notable advances in all these types of service, the prevention of dental disease has received emphasis in recent years, both in research and in clinical practice.

In the late years of the 19th century and the early years of the 20th a series of investigations of dental and other oral infections emphasized the idea that dental disease was related to a variety of systemic conditions, either as cause or as effect. The investigations showed that many systemic conditions were manifested in the oral cavity and that these manifestations were often mistakenly regarded as having their origin in the mouth. They also pointed out that pathological conditions which developed in the oral cavity spread to other parts of the body. Recent findings in chemical biology laid new emphasis on the importance of adequate diets and of balanced glandular functions for dentition and the maintenance of dental as well as general health. And more recently the conclusions of studies which showed the relations between the chemical (fluoride) content of drinking water and the maintenance of sound teeth provided further emphasis on the relation between general and dental health.

As a result of the developments mentioned above, dentistry has come more and more to be regarded as a significant service to the health—both dental and general—of the individual. It has also become obvious that there should be a very close relationship between dental and medical service. Some efforts have been made by practitioners, mostly dentists, to develop a close cooperative relationship between the dental and the medical professions, but in many instances they have not been outstandingly successful. Some cooperation does exist but by no means to the extent that is desirable in the interest of the public health.

Number of Dentists

There were 93,726 dentists in the United States in 1953, not including 588 in the Territories and Outlying Possessions. Thus there was 1 dentist to each 1,677 persons in the population. The distribution of dentists throughout the country is very different from the distribution of the population. In the State which is most poorly supplied the population per dentist (5,166) is almost 5 times as great as in the State at the other extreme (1,133). Likewise, within States the ratio of population to the number of dentists is in many instances very uneven from section to section. Sizable fairly well populated areas are today without dentists. Dentists, like practitioners of other professions, tend to settle in the larger and more prosperous centers, and therefore some communities are crowded with practitioners while many others are undersupplied.

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*Chief for education in the health professions, Office of Education; formerly executive secretary, Curriculum Survey Committee, American Association of Dental Schools. A draft of the article was read by the following men and subsequently revised to take account of their suggestions: (1) Lester W. Burket, Dean, School of Dentistry, University of Pennsylvania; (2) George B. Denton, Research Consultant, American Dental Association; (3) Willard C. Fleming, Dean, College of Dentistry, University of California; (4) Paul H. Jeserich, Dean, School of Dentistry, University of Michigan; (5) J. Ben Robinson, Dean, School of Dentistry, West Virginia University. Unless otherwise indicated, the statistical data were obtained from the American Dental Association.

The great majority of dentists are engaged in private practice and receive their income from fees of their patients. Most of these private practitioners carry on a general practice, but a small though increasing number limit their practice to a specialty, notably oral surgery, orthodontics, pedodontics, periodontics, or prosthodontics. A considerable number of dentists in the United States hold full-time or part-time salaried positions.

The extension of dental service to a larger percentage of the population has been accompanied by the development of auxiliary personnel—the dental hygienist, the dental office assistant, and the dental laboratory technician. Schools and courses exist for training these workers, but many of the dental assistants and the laboratory technicians obtain their training through a preceptorship or apprenticeship in a dental office or a dental laboratory.

Professional Organizations

The American Dental Association is the national professional association of dentists. It was founded in 1859, and at present it has 80,127 members. Constituent societies exist in every State, the District of Columbia, Hawaii, the Panama Canal Zone, the Philippine Islands, and Puerto Rico.

The association has established 18 councils, each with designated functions. Among them are the Council on Dental Education and the Council of the National Board of Dental Examiners. It maintains an office in Chicago with a staff of more than 100 employees. Its publications include the monthly *Journal of the American Dental Association*, the quarterly *Journal of Oral Surgery*, the annual *Accepted Dental Remedies*, and the *American Dental Directory*, which is issued from time to time.

There are a number of other dental associations, most of them organizations of specialists, such as the Academy of Denture Prosthesis, the American Academy of Periodontology, the American Association of Orthodontists, and the American Society of Oral Surgeons, whose members are also members of the American Dental Association. Local dental societies are found in many communities. The American College of Dentists, an important honorary association organized in 1920, consists of leading practitioners banded together to promote the highest professional aims.

Licensure

All States and the District of Columbia regulate the practice of dentistry and require practicing dentists to obtain licenses. The first State nominally to require an examination by a board for admission to the practice of dentistry was Alabama, in 1841, but the law appears to have been inoperative. Kentucky, New York, and Ohio in 1868 by law specified requirements for admission to dental practice. Other States followed, some rather slowly, and not until 1907 did all of them establish such requirements.

The licensing of dentists is usually a function of a State board of dental examiners, the members of which are generally appointed by the State governor. In a few States the licensing is delegated to State educational authorities who delegate the examining of candidates to the boards of dental examiners.

A number of States have reciprocal arrangements under which they recognize licenses issued in other States. Under some of these arrangements a licensed dentist in one State is required to take only a practical examination in the State where he desires to practice.

The State boards of dental examiners have joined to form the American Association of Dental Examiners, originally established in 1883. Its purpose is to secure high and uniform qualifications for dental practitioners and uniformity in the function of the boards and in legislation creating them. The association has taken an interest in the improvement of dental education. It also concerns itself with the scope, content, and form of licensing examinations, the evaluation of credentials from foreign dental schools, the appraisal of American dental schools, and the violations of standards of dental practice. In recent years it has conducted an annual seminar on dental examinations.

Eight States provide by law for the licensure or certification of specialists. Some other States recognize the specialist to the extent that a dentist who limits his practice to a specialty may legally announce that fact publicly. In other States the laws are silent regarding specialty practice. Specialists have established boards in 7 fields to examine those who wish to obtain certification as specialists.

In order to provide a service to the State boards of dental examiners and to graduate dentists the National Board of Dental Examiners was established in 1928 through action by the American Dental Association. This board gives written examinations which are similar in range and content to examinations given by the State boards. All practical examinations are administered by the State boards. The examinations given by the national board have no independent legal status; they serve a useful purpose only insofar as State boards of dental examiners in some States are legally authorized to accept them in lieu of their own. These examinations are now recognized by 28 States and Puerto Rico and by the U. S. Army, the U. S. Navy, and the Public Health Service of the U. S. Department of Health, Education, and Welfare.

Evolution of Dental Education

Dental education, like several other forms of professional education, had its beginning in the preceptorial or apprentice system of training for the trades and professions in the Middle Ages. No dental school existed before 1840. In that year the Baltimore College of Dental Surgery was established—the first dental school in the world.[1] During the next 44 years 28 additional schools were established. The first university school was organized in Harvard University in 1867, and the first one established in a State university was at the University of Michigan in 1875.

After 1884 the number of dental schools increased until it reached the peak of 67 in 1900. By 1930 it had reached a low point of 38. Currently the number is 43. A new dental school is being organized at West Virginia University.

Many of the dental schools established before World War I were proprietary schools, schools calculated to make profits for the owners. As standards of dental education were raised, the proprietary schools were unable to continue; the last of them became a public trust in 1929. The elimination of the proprietary school was accompanied by a trend toward the absorption of dental education by the universities. Today there is only one independent dental school in the United States.

Educational Associations

Before 1884 the dental schools conducted their affairs without effective cooperation and in many respects in undesirable competition. In that year representatives of 10 schools established the National Association of Dental Faculties. For nearly 30 years it was the most influential executive agency for the general promotion of dental education.

Several other educational associations were formed. The National School of Dental Technics, established in 1893, became the American Institute of Dental Teachers in 1914. The Dental Faculties Association of American Universities was formed in 1908 by representatives of six university dental schools. In 1920 the Canadian Dental Faculties Association was established by the dental faculties in Canada. All three of these organizations were constructive influences for improved curriculums, better teaching, and higher standards of education.

The four associations were amalgamated in 1923 to form the American Association of Dental Schools. The schools of dentistry in the United States and Canada are members of this organization. It holds an annual meeting, publishes proceedings, and issues a quarterly periodical—the *Journal of Dental Education.*

Educational Surveys and Studies

Four extensive surveys and studies have been made of dental education. The first of these, made by William J. Gies, was sponsored and financed by the Carnegie Foundation for the Advancement of Teaching and reported in 1926 under the title *Dental Education in the United States and Canada.* This work, an accurate and comprehensive source book on the evolution of dental education in America, spelled the doom of the proprietary dental school, emphasized the significance of dental care as a health measure, and indicated the obligation of society to provide adequate support for dental education and research.

By 1930 a set of new problems had arisen in dental education, one of which was the place of the biological sciences in the dental curriculum. A second problem related to the curriculum pattern which had become confused because the schools followed three types of plans: 1 year of predental education in arts and sciences and 4 years of dental education, 2 years of predental and 3 years of dental education, 2 years of predental and 4 years of dental education. The discussions of these and other problems led to an extensive curriculum survey, the results of which were reported in 1934 and published in 1935 under the title, *A Course of Study in Dentistry.* The project was sponsored by the American Association of Dental Schools and was financed by the Carnegie Corporation of New York. It dealt with the dental curriculum in considerable detail, and it recommended a 2–4 plan of dental education, which the association adopted. The report was extensively used by the dental schools as a guide in revising their curriculums. A second work resulting from this effort was published in 1945 as *Teaching in Colleges and Universities* with special reference to dentistry.[2] This publication deals with learning, the teacher, and methods of teaching.

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[1] The Baltimore College of Dental Surgery was joined with the dental department of the University of Maryland in 1923 to become the Dental School of the University.

The third study was a project of two deans of dental schools, John T. O'Rourke and Leroy M. S. Miner, and was reported in 1941 under the title *Dental Education in the United States.* It set forth opportunities for further progress and for more effective public service, and it suggested modifications "to raise the level of dental education to a point consistent with the enlarged body of knowledge in dentistry and its related fields." The report is a critical discussion of the principal problems of dental education.

The fourth study of dental education was made by the Council on Dental Education of the American Dental Association as a basis for issuing its list of approved dental schools in 1945. A detailed report of the findings was prepared by the executive secretary of the council, Harlan H. Horner, and published in 1947 as *Dental Education Today.* It is an outstanding work on recent conditions in dental education.

A fifth study, more limited in scope, was made by the Public Health Service of the U. S. Department of Health, Education, and Welfare. The report, published in 1952 under the title of *Financial Status and Needs of Dental Schools,*[3] dealt with faculty resources, operating expense, financial resources, and unmet needs. Schools of dental hygiene were included in the study.

Accreditation

The first effort to accredit dental schools in the United States was made through the Dental Educational Council of America, which existed from 1909 to 1936. The function of accreditation is now performed by the Council on Dental Education, which was organized in 1938 as a standing committee of the American Dental Association. Three representatives of the American Dental Association, three of the American Association of Dental Examiners, and three of the American Association of Dental Schools constitute the membership of the council. The council has a full-time secretary, a it maintains an office at the headquarters of t American Dental Association. All except one of t dental schools in the United States have been a proved by the council, but for two of them t approval is provisional. The one school that is accredited has not yet enrolled students in all 4 ye of the curriculum; it has not been visited for creditation.

In addition to accrediting dental schools, t Council on Dental Education performs other fu tions, one of which is the holding annually of Congress on Dental Education and Licensu This meeting affords dental educators and den examiners an opportunity to discuss their comm problems.

Schools of Dentistry and Enrollments

There are 43 dental schools in the United Stat Four of them have been opened since 1945. The is now at least 1 dental school in each of 24 Sta and the District of Columbia. The control of t schools is: State, 16; municipal, 1; private, About 38 percent of the undergraduate students enrolled in the publicly controlled schools.

In the fall of 1953 the dental schools enrolled total of 12,516 undergraduate students. (See ta 17.) Of this number 117 were women. Additio enrollments included 834 special students, graduate students, and 1,051 students of den hygiene.[4] The average (median) undergradu dental enrollment was 285; the smallest was and the largest 598.

Admission Requirements

The Council on Dental Education has establish as the minimum basis for admission to an appro dental school the successful completion of two academic years of work in an accredited college arts and sciences. The college course must inclu at least a year's credit in English, in biology, physics, and in inorganic chemistry, and a half ye credit in organic chemistry. The standards st that all the courses in science should include b class and laboratory instruction. Formal credit biology and physics may be waived for superior dents with 3 or more years of college credit earned an accredited college. All approved dental scho make these requirements of applicants for admissi

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[2] By Lloyd E. Blauch and Associates. Published by the American Association of Dental Schools.

[3] Public Health Service Publication No. 200. Washington, U. S. Government Printing Office.

[4] Twenty-two dental schools maintain schools for dental hygienis additional 9 schools for dental hygienists, not parts of dental schools, e 747 students in 1953.

Table 17.—Undergraduate, graduate, and postgraduate students enrolled in the dental schools of the United States, 1928–1953

[October enrollments]

Year (October)	Undergraduate students	Graduate students	Postgraduate students
1928	8, 200	----------	37
1929	7, 813	----------	20
1930	8, 129	----------	37
1931	8, 031	35	5
1932	7, 508	43	21
1933	7, 160	38	26
1934	7, 175	66	94
1935	7, 306	78	63
1936	7, 397	68	17
1937	7, 184	81	70
1938	7, 331	93	140
1939	7, 407	126	276
1940	7, 720	101	149
1941	8, 355	90	186
1942	8, 847	63	105
1943	9, 014	54	309
1944	8, 590	27	369
1945	7, 274	67	580
1946	8, 287	100	1, 067
1947	8, 996	183	1, 071
1948	10, 132	204	1, 273
1949	11, 336	282	1, 138
1950	11, 891	349	1, 381
1951	12, 169	299	1, 376
1952	12, 370	280	*4, 435
1953	12, 516	332	*4, 131

*Based on enrollment for all or any part of the preceding school year.

Source: Dental Students' Register published by the Council on Dental Education, American Dental Association.

and a few specify additional subjects or make certain other requirements.

For years some dental schools have given aptitude tests to applicants for admission. In 1946 the Council on Dental Education, in cooperation with the American Association of Dental Schools, instituted an aptitude testing program on a 5-year experimental basis. A nationwide program was established in 1950. The tests are given at a number of centers. The results of the tests are used by dental schools as one type of data in determining which applicants to admit. More than 98 percent of the freshman students admitted by the dental schools in the fall of 1952 had taken the aptitude tests and presented scores for consideration.

A majority of the students recently admitted to dental schools have had 3 or more years of work in college. The amount of predental college training of the 12,516 undergraduates enrolled in 1953 was: 2 years, 22 percent of the students; 3 years, 27 percent; 4 years without degree, 6 percent; bachelor's degree, 42 percent; master's or other advanced degree, 3 percent. Thus it will be noted that slightly more than one-half of the dental students had at least 4 years of college work before they enrolled in dental school.

The current admission requirements are the result of a development extending over more than a half century. In 1885 the admission requirement of schools belonging to the National Association of Dental Faculties was stated as "a good English education," and in 1897 it was established as a certificate of entrance to the first year of a high school, or its equivalent, to be determined by examination. Not until 1910 were applicants required to complete an accredited high school course or to pass an examination representing the equivalent of such a course. This requirement was also adopted by the Dental Educational Council of America in 1910. Beginning with the school year 1926–27 the council required all approved dental schools to exact for admission 1 year of college work with credit in certain prescribed subjects.

When the American Association of Dental Schools acted on the report of its Curriculum Survey Committee in 1934 it adopted the 2-4 plan of dental education. This plan was accepted by the Council on Dental Education and placed in its requirements for the approval of a dental school, effective with the academic year 1942–43. It remains in force today.

Professional Curriculums and Degrees

The professional curriculum in dentistry in all dental schools covers 4 academic years. In several schools the time may be shortened by study in a summer session or in a summer quarter, but the total amount of time required of the student is the equivalent of 4 years. The Council on Dental Education requires each approved school to have a course of study of not less than 3,800 and not more than 4,400 clock hours. The courses consist of didactic instruction and laboratory and clinical instruction and experience. About one-fourth of the student's time is taken up by the didactic instruction, and the rest is spent in the laboratories and the clinics.

The subjects usually found in the dental curriculum are anatomy, histology, embryology, oral anatomy, physiology, biochemistry, bacteriology, pharmacology, pathology, diagnosis, radiography, medicine, orthodontics, dentistry for children, operative dentistry, periodontics, pulp canal therapy, prosthetic dentistry, oral surgery, anesthesia, dental materials, public health, history of dentistry, practice management, ethics, and jurisprudence.

During a considerable part of the junior and senior years—in a number of schools and to a limited extent in each year—the student renders service to patients in the dental clinics, where he learns to perform practically all types of dental operations. In some dental schools, however, the instruction in several fields, notably orthodontics, is limited, and it is assumed that graduates who desire to treat cases of malocclusion, cleft palate, impacted teeth, and other conditions that present special difficulties will engage in further study through graduate and postgraduate courses.

The 4-year curriculum in dentistry is the result of more than a hundred years of progress. The Baltimore College of Dental Surgery in 1840 required the student to take two courses of lectures, each of about 4 months' duration. Graduates received the degree of doctor of dental surgery (D. D. S.). Apparently the college had no regular clinic or infirmary until 1845. It was expected that recipients of the dental degree should obtain, or have obtained, practical experience in a dentist's office, but this requirement was probably not insisted upon. With the development of dental clinics in the colleges, the general pattern of dental education—a combination of didactic, laboratory, and clinical instruction—was established. Most of the colleges followed the first one in awarding the D. D. S., but the Harvard University Dental School awarded the degree of doctor of dental medicine (D. M. D.).

As the States enacted dental practice laws requiring dentists to be licensed, graduation from a dental school became a common prerequisite to obtaining a license, and training by apprenticeship fell into disuse. This development was accompanied by a trend toward lengthening the school program through increasing the number of years and the number of school months each year. By 1884, when the National Association of Dental Faculties was organized, the trend in dental education was toward a 3-year curriculum. However, not until 1889 did that organization demand that its members require students to attend three full regular courses of not less than 5 months each in separate years. From time to time the annual sessions were lengthened, and in 1917 t association set the minimum time for graduatio four separate academic years each of 32 weeks o days. This was also the standard adopted by t Dental Educational Council of America effective 1917. The council in 1926, taking into accoun recommendation of Dr. Gies for a 2–3 plan of den education, recognized that plan in its standards.

Subsequent actions on the plan of dental educati as taken by the American Association of Den Schools in 1934, and later by the Council on Den Education, have been indicated in the previo section.

The degree awarded by most of the dental scho for the completion of the dental curriculum is doc of dental surgery, but 4 schools grant the degree doctor of dental medicine. The dental profes and the State boards of dental licensure recognize distinction between the two degrees.

Table 18.—First professional degrees conferred by dental schools, 1935–53

Year ended	Number of degrees	Year ended	Numbe degre
1935	1, 840	1945	3,[illegible]
1936	1, 736	1946	2,6
1937	1, 739	1947	2,2
1938	1, 704	1948	1,7
1939	1, 794	1949	1,[illegible]
1940	1, 757	1950	2,[illegible]
1941	1, 568	1951	2,0
1942	1, 784	1952	2,9
1943	1, 926	1953	2,9
1944	2, 470		

Source: Dental Students' Register published by the Council on Dental E cation, American Dental Association.

Recently almost 3,000 students a year have r ceived degrees in dentistry. (See table 18.)

Graduate Education

Graduate courses for dentists have been availab for some years, but until recent years the enrollme in such courses was small. (See table 17.) The 3 graduate students in the fall of 1953 were found i 26 schools. Enrollments ranged from 1 to 37. small number of additional graduate students i dentistry are found in the School of Medicine a Dentistry at the University of Rochester and th

Walter G. Zoller Memorial Dental Clinic at the University of Chicago. The great majority of the graduate students are working for the master's degree; a few are enrolled for doctor's degrees, usually the doctor of philosophy. Almost 100 graduate degrees are conferred each year. (See table 19.)

Table 19.—Graduate degrees conferred in dentistry and dental science, 1947–53

Year	Master's and second professional degrees	Doctor's degrees
1947–48	92	----------
1948–49	84	----------
1949–50	89	1
1950–51	74	1
1951–52	95	2
1952–53	96	----------

Source: Compiled from annual reports of earned degrees made by the Office of Education.

Postgraduate Education

A considerable number of practicing dentists continue their professional education but without working toward advanced degrees. Some of these practitioners prepare for specialized practice and take courses extending over 1 or more years. These long courses have become a regular feature of the instruction in a limited number of dental schools. Upon completion of these courses the students receive certificates of proficiency.

Other practitioners pursue, in dental schools, short courses of a few days to several weeks, largely to review and refresh their knowledge or to bring themselves up to date on current knowledge and techniques. For years dental associations and societies have provided short courses and clinics for practitioners.

The 4,131 postgraduate students reported for the year 1952–53 were found in 32 dental schools. The enrollments ranged from 2 to 457. They did not include 3,500 dentists enrolled in a telephone program offered by one of the schools.

Internships and Residencies

In recent years a number of hospitals have established dental internships and residencies. The hospital dental internship is "a form of professional education beyond the undergraduate level which offers special opportunity for advanced clinical experience and additional training in the sciences basic for dental practice." The dental intern is a member of the house staff of the hospital, and he works and studies under the supervision of the staff. Internships usually are for 1 or 2 years. Delaware is the only State which requires a dental graduate to have a year's internship before he can be admitted to the dental licensing examination.

A hospital dental residency, as defined by the Council on Dental Education, is "a progressive and graduated educational experience, under hospital auspices, designed for the dental graduate who has completed a dental internship in an approved hospital, or at least a year of graduate training in basic sciences, or a suitable equivalent acceptable to the Council on Dental Education." In general, residencies are planned to train dentists for specialties. They usually extend over a period of not less than one calendar year.

The Council on Dental Education has had the responsibility, since 1946, for reviewing and approving hospital educational programs for dental graduates. As of September 1953 the council had approved 156 dental educational programs in 119 hospitals.

Research

Research in dental problems is carried on in a number of dental schools and in several organizations and agencies. For years, beginning in 1913, the American Dental Association had a Research Commission which supported a variety of projects. This work is now sponsored by the Association's Council on Dental Research. The National Institute of Dental Research of the Public Health Service also supports research activities through fellowships and research grants. Funds have been made available by philanthropic and governmental agencies for research in some of the dental schools. A result of this development is that some excellent work is under way.

The President's Commission on the Health Needs of the Nation reported in 1952 that the dental schools of the country in 1949–50 spent $733,000 for research. This figure represented only about 3 percent as much as the amount expended by medical schools for research.

The International Association for Dental Research, formed in 1920, is one of the principal agencies for promoting inquiries into dental diseases and disorders and dental materials. It has sections in a number of cities of the United States and in several foreign countries. The association, which has 600 members, holds an annual meeting immediately preceding that of the American Association of Dental Schools. It publishes the bimonthly *Journal of Dental Research.*

Some Current Problems

Dental education is today beset with numerous problems. The following discussion of some of them is based upon statements obtained from eight deans of dental schools.[8]

Financial support.—The most serious problem in dental education is a financial one; the support is not sufficient to secure adequate facilities and teaching staffs. Only 16 States maintain dental schools, and a few others make contributions to schools not controlled by them. Several additional States have entered into regional arrangements to educate limited numbers of dental students. A large number of the States have not shown a willingness to shoulder the burden of educating their dentists.

The most recent data on the income of dental schools were reported in 1952 by the Public Health Survey, which showed that for the year 1949–50 the privately controlled dental schools received 42.9 percent of their current income from students, 28.4 from clinic receipts, and only 28.7 percent from other sources. Thus these schools place much dependence upon receipts from student fees and from clinic fees paid by patients. Dental schools are increasing fees in order to balance their budgets but in doing that they are failing to acquire fully the funds they need. Moreover, the increasing student fees are tending to put the cost of dental education beyond the reach of many well qualified young men and women. The publicly controlled dental schools are in a somewhat better financial position than the others, but even they run into great difficulty in obtaining legislative support for anything beyond their undergraduate programs.

Physical facilities.—Many dental schools lack adequate buildings and equipment to carry on first rate programs of dental education. A number of the schools are well housed and equipped, but the majority are hindered in their teaching efforts because of poor physical facilities.

Medical-dental relationship.—In some universities the relationship between the dental school and the medical school is far from satisfactory, although it is slowly improving. Instruction in the basic sciences in many institutions is organized in the medical schools, which at times results in neglecting and penalizing the dental student. One dental dean suggests that, in order to correct such a situation, basic science departments should be organized in the universities but outside the medical schools. In some universities the dental schools and the medical schools maintain their own faculties and departments in the basic sciences. There is often only a limited amount of cooperation in the clinical instruction of the medical and dental schools, but in a few institutions good working arrangements exist.

Curriculum and teaching methods.—What should be the content of the dental curriculum and how should it be organized and taught are ever-present problems. The objectives of dental education should be restated. There should be more instruction in the basic sciences and better integration and coordination between instruction in the sciences and the clinical instruction. Ways should be found, if possible, of reducing the heavy demands made on students by the technic and clinical requirements without lowering the achievement of students. How all the learning required to make a competent dentist can be accomplished in a period of 4 years is a question that has not been satisfactorily answered, and with the increase in the knowledge of dental problems and the development of new forms of dental service it becomes even more difficult to answer. The dental curriculum in almost all the schools lacks the flexibility that is essential to making the most of the talents and interests of dental students.

With an increasingly crowded curriculum the problem of finding and using the most efficient and effective teaching methods becomes ever more pressing.

These considerations have given rise to the feeling among dental educators that a new thorough study should be made of the dental curriculum on a nationwide basis. Steps have been taken to provide for such a project as an integral unit in an extensive survey of dentistry and the dental profession.

Teachers.—A continuing short supply of competent dental teachers presents a marked difficulty. This shortage is serious not only in terms of numbers but even more in terms of interest and competence. Limited financial remuneration is largely responsible for this problem. A small number of dental schools are trying through graduate and post-graduate courses and fellowships and well paid assistantships to develop competent clinical teachers, but the number of such new teachers becoming available is far from adequate to meet current and future needs. What is needed is more graduate education to prepare graduates for teaching careers in dentistry, and also more inservice training to improve the work of teachers. Programs to accomplish these purposes should provide specifically for some training in the art of teaching.

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[8] William H. Crawford, University of Minnesota; Maynard K. Hine, Indiana University; Harry Lyons, Medical College of Virginia; Lee Roy Main, St. Louis University; Harold J. Noyes, University of Oregon; J. Ben Robinson, West Virginia University; Gerald D. Timmons, Temple University; and L. E. Van Kirk (deceased), University of Pittsburgh.

Graduate work.—Providing funds for graduate work is one of the serious problems in dental school programs. To an increasing degree, dental graduates wish to continue their education, but their opportunities to obtain fellowships and to find the training they desire are limited.

Postgraduate opportunities.—Opportunities for postgraduate education in dentistry are not now available in terms of quantity and quality that are needed, although they are increasing. Reasons why postgraduate programs have developed slowly or are entirely lacking in some dental schools are the lack of facilities and funds to employ additional staff for such instruction and the caution that must be observed not to attempt to conduct postgraduate courses at the expense of undergraduate education. Progress has been made by some schools in obtaining adequate facilities and funds for this purpose. The W. K. Kellogg Foundation has made grants to several schools to assist in developing postgraduate instruction. These grants have been a great stimulus in some areas of the country.

Research.—One of the most difficult problems is the lack of extensive, sustained, broad dental research programs in many dental schools. A considerable amount of research is being done by dental teachers but frequently under frustrating conditions. Inadequate physical facilities, poor financial support, and heavy teaching assignments which consume the time and energy of teachers are handicaps to research.

Such are some of the difficult problems which currently confront those who are concerned with dental education. They are being handled with vision and determination; they will be overcome as the public sees the need for and provides adequate financial support, either through philanthropy or through appropriations from public funds.

Dental Schools and Enrollments

The undergraduate and graduate dental enrollments in the 43 dental schools on October 15, 1953, are shown below. The first number indicates the undergraduate and the second number the graduate students.

ALABAMA
  University of Alabama, 189, 10

CALIFORNIA
  College of Medical Evangelists, 42, 0
  College of Physicians & Surgeons, 212, 0
  University of California, 233, 4
  University of Southern California, 410, 10

DISTRICT OF COLUMBIA
  Georgetown University, 368, 10
  Howard University, 193, 0

GEORGIA
  Emory University, 310, 2

ILLINOIS
  Loyola University, Chicago, 363, 0
  Northwestern University, 388, 36
  University of Illinois, 290, 16

INDIANA
  Indiana University, 274, 13

IOWA
  State University of Iowa, 208, 24

KENTUCKY
  University of Louisville, 231, 1

LOUISIANA
  Loyola University, New Orleans, 212, 0

MARYLAND
  University of Maryland, 428, 5

MASSACHUSETTS
  Harvard University, 60, 0
  Tufts College, 362, 1

MICHIGAN
  University of Detroit, 291, 3
  University of Michigan, 362, 37

MINNESOTA
  University of Minnesota, 358, 22

MISSOURI
  St. Louis University, 301, 4
  University of Kansas City, 410, 9
  Washington University, 193, 8

NEBRASKA
  Creighton University, 177, 0
  University of Nebraska, 125, 5

NEW YORK
  Columbia University, 153, 0
  New York University, 598, 10
  University of Buffalo, 234, 0

NORTH CAROLINA
  University of North Carolina, 167, 4

OHIO
  Ohio State University, 440, 26
  Western Reserve University, 233, 2

OREGON
University of Oregon, 291, 0

Pennsylvania
Temple University, 518, 0
University of Pennsylvania, 542, 32
University of Pittsburgh, 383, 18

TENNESSEE
Meharry Medical College, 124, 0
University of Tennessee, 393, 0

TEXAS
Baylor University, 274, 0
University of Texas, 243, 0

VIRGINIA
Medical College of Virginia, 206, 0

WASHINGTON
University of Washington, 285, 20

WISCONSIN
Marquette University, 442, 0

Totals:
Undergraduates (men, 12,399; women, 117), 12,516
Graduate students (26 schools), 332
Special students (12 schools, not included above), 834
Postgraduate students (31 schools, not included above), 4,131

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9. Engineering Education

By HENRY H. ARMSBY[*]

A MAJOR FACTOR in the great industrial and technological development which has given the United States its high standard of living has been the existence and the steady growth and improvement of a system of engineering education, which has prepared students to translate scientific discoveries into practical, economical structures, machines, and processes. The present system of engineering education has been developed principally during the last 100 years, during which time the engineering applications of science to practical problems have resulted in more new developments than in all recorded prior history.

These applications of engineering to industry and public works have made great contributions to the economy and welfare of the Nation. They have also indicated the need for further research, which has resulted in new discoveries, which in turn have led to new engineering applications. In all these developments education plays a prominent part, since it supplies the trained persons to do the research, to develop the new processes, and to apply them to practical problems.

Evolution and Functions of Engineering

Engineering is broadly defined as the art and science of controlling and directing the materials and forces of nature for the use and convenience of man. It is as old as civilization, since one of the bases of modern civilization is the realization that the laws of nature cannot be changed by argument or bluster, but that man can learn those laws and can *plan ingenious methods* of utilizing them. "Engineering" is derived in part from the same stem as "ingenious." The engineer is a man of ingenuity.

In the Middle Ages men practiced engineering, utilizing such "machines" as rollers, levers, and inclined planes. Their talents were used chiefly in military activities, but they understood the theory and practice of building arches, the science of mechanics, and many of its applications to peace as well as to war. They were restricted in their sources of power largely to human muscles, with some use of animal power, and a limited direct use of water power. Nevertheless, many of their structures have survived centuries of use.

The industrial revolution, which might well be called an engineering revolution, brought on by inventions such as the steam engine, the spinning jenny, and the cotton gin, created needs for well-trained men in much larger numbers and with greater breadth of training than could be produced under the apprentice system. This need led to the establishment, first in Europe and later in America, of schools to train engineers. These schools developed from those which had been training military engineers. Since from the start they have provided a professional type of education, engineering has developed into a profession rather than a trade.

Definition of Professional Engineer

The model registration law, endorsed by 13 of the principal national engineering organizations, defines a professional engineer as one who applies the mathematical and physical sciences and the principles and methods of engineering analysis and design to professional or creative work in the investigation, evaluation, planning, design, and supervision of construction of structures, machines, equipment, or processes.

This definition excludes many groups popularly designated "engineers," but actually composed of technicians engaged in crafts, trades, or occupations such as engine and machine operators, technical assistants, and maintenance men. These technicians can be qualified for their work by much shorter and more elementary training programs than professional engineers can be.

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[*] Chief for engineering education, Division of Higher Education, Office of Education. Mr. Armsby is serving his fourth term as a member of the General Council of the American Society for Engineering Education. He has been a vice president of the society, and chairman of two different regional sections. He has served and is serving on many society committees, including the Committee on Improvement of Teaching and the Committee on Evaluation of Engineering Education, mentioned in this article.

The fields of specialization for engineers now recognized by accreditation are: aeronautical, agricultural, architectural, ceramic, chemical, civil, electrical, engineering mechanics, engineering physics, general engineering, geological, geophysical, industrial, mechanical, metallurgical, mining, naval architecture and marine, petroleum, process, sanitary, and textile.

Within any one of these fields engineers may be classified according to the functions they perform, among which the more important are: research, product development, design, manufacture, construction, operation, service, quality control, management, sales, consulting, and teaching.

There is a growing tendency for industry to draw on the engineering profession not only for men to perform engineering functions, but also for men to serve in managerial capacities. Many engineers are found to be peculiarly qualified for such positions due to their training in exercising judgment, in weighing all the factors in a problem, and in combining consideration of technical requirements with human factors.

A study was made in 1947 of the academic backgrounds of the presidents of 150 large American corporations, which constituted a good cross section of American industry and included many industries not essentially engineering in nature. The study showed that 33 percent of the presidents were graduates of engineering colleges; 30 percent of liberal arts and teachers colleges; 17 percent of all other types of colleges; and 20 percent had received no college education. The report stated that the proportion of engineers had increased greatly during the years just before the study was made. It probably has continued to increase, not only for presidents, but also for other administrative officers.

Supply and Demand

Engineering is the Nation's largest technical profession and one of its fastest growing fields of work. The Bureau of Labor Statistics has estimated that the profession has grown from about 40,000 in 1900 to 130,000 in 1920; 260,000 in 1940; and about 400,000 in 1950. This represents a tenfold expansion in the profession over the last half century, and an expansion of about 66 percent since 1940.

Data on the number of engineers in the various subdivisions of the profession are not very reliable, partly because engineers can easily change from one to another. However, a reasonably good idea of t growth of the various branches can be obtained fro table 20.

Table 20.—Undergraduate degrees in engineering educatio 1940–41 and 1952–53

Branch of Engineering	Undergraduate degre	
	1940–41	1952–5
Aeronautical	435	64
Agricultural	156	31
Architectural	185	64
Ceramic	83	11
Chemical	2,398	2,27
Civil and sanitary	1,430	4,41
Electrical	2,467	4,90
General	429	60
Industrial	552	1,52
Mechanical	3,618	5,91
Metallurgical	451	59
Mining	313	30
Naval architecture	95	15
Petroleum	362	56
Others	173	1,18
Total	13,147	24,16

Not only has the number of engineers been rapidl increasing, but the ratio of engineers to total indus trial workers has also been steadily rising. In 190 there was 1 engineer to about 255 workers; in 195 1 engineer to about 65 workers. With the rapidl increasing complexity of modern technology, ther is every reason to believe that this trend will continu for some time to come.

The Bureau of Labor Statistics estimates that th average annual number of graduate engineers neede under the present conditions of partial mobilizatio is about 30,000. The immediate need, during th "tooling-up" period, is much greater. In contras to this need the available supply, based on 195 enrollments, is for 1954 about 19,000, for 1955 abou 23,000, and for 1956 about 30,000, with little increas over this figure in sight for several years. Thus there seems no immediate prospect of meeting th current acute shortage of engineers.

Registration of Engineers

Registration of engineers, the legality of which i based on the power of the State to protect lif health, safety, and property, started in Wyoming i

1907. Registration laws have now been passed in all the States, the District of Columbia, and the Territories of Hawaii, Puerto Rico, and Alaska.

Engineering registration laws are not uniform, due to local conditions, date of enactment, etc. Most State laws, however, require either graduation from an accredited engineering curriculum, a written engineering examination, adequate and satisfactory engineering experience, or a combination of these. In general, registration is required of engineers who sign plans, contracts, and specifications, or who are responsible for the conduct of engineering operations. Engineers in subordinate positions, in general, are not required to register, though many do.

Professional Engineering Societies and Journals

The growth in numbers and in diversification of the engineering profession is indicated roughly by the growth in the number of national engineering societies. The American Society of Civil Engineers was founded in 1852, and was the first national professional engineering society in the United States. "Civil," a contraction of "civilian," was used to distinguish its members from military engineers. Its centennial was celebrated in the summer of 1952 in Chicago at the Centennial of Engineering, in which it was joined by many other engineering societies. The other "founder societies" were organized as follows: Mining Engineers (1871); Mechanical Engineers (1880); Electrical Engineers (1884); and Chemical Engineers (1908). Metallurgical Engineers were added to the Mining Engineers in 1919.

There are now 70 or more national engineering societies in the United States, about 30 of which maintain technical journals. In addition to the national societies, there are many local societies and branches of the national societies.

Development of American Engineering Education

The first school of technology in any English-speaking country was the United States Military Academy at West Point, established in 1802. Early American civilian engineering schools included Rensselaer Polytechnic Institute which was established in 1824; and the engineering schools in Union College in 1845; Harvard University, Yale University, and the University of Michigan in 1847; Dartmouth College in 1851; and New York University in 1854.

In 1862 the Congress passed the first Morrill Act, setting aside public lands for the establishment and support of colleges of agriculture and the mechanic arts. The colleges instituted under this act, which are known as the land-grant colleges, contained schools of engineering, and their establishment gave an impetus to the development of similar schools in private institutions and non-land-grant State universities. The number of engineering schools in operation had increased to 85 by 1880, and to more than 100 in 1893, when the world's Columbian Exposition was held. At this exposition the Society for the Promotion of Engineering Education (SPEE) was organized as Section E of the World's Engineering Congress. In 1945 the society became the American Society for Engineering Education (ASEE). The number of engineering schools has continued to increase, to 147 in 1940, and to 210 in 1953, of which 149 are accredited in at least one curriculum by the Engineers' Council for Professional Development (ECPD).

Surveys and Studies of Engineering Education

In 1907, SPEE invited the "founder societies" in engineering and the American Chemical Society to join it in a study of engineering education and of the desirable degree of cooperation and unity between engineering schools. The following year the Carnegie Foundation for the Advancement of Teaching and the General Education Board were invited to participate. This study led to the report by C. R. Mann published in 1918, under the title *A Study of Engineering Education*, by the Carnegie Foundation for the Advancement of Teaching. The report indicated a need for a more detailed investigation of the objectives of engineering education and the adequacy of the curriculums.

A study of practice and opinions in 150 cooperating colleges, in which committees including over 700 persons participated, during the years 1923–29, under the directorship of W. E. Wickenden, resulted in a two-volume *Report of the Investigation of Engineering Education*, published in 1930 and 1934, and commonly called the "Wickenden Report." This report guided engineering education through the postwar years of the 1920's and the depression of the 1930's, and is still a source of information and inspiration to engineering educators.

In 1938, through a grant by the Carnegie Foundation for the Advancement of Teaching, a detailed, analytical study was made under the direction of D. C. Jackson of factual material on nearly all aspects and conditions of engineering education in the United States. This material had been accumulated by the

Committee on Engineering Schools of ECPD in surveying 679 engineering curriculums in 136 institutions from 1935 to 1938. Dr. Jackson's report, *Present Status and Trends of Engineering Education in the United States*, was published by ECPD in 1939. This report has been useful to all interested in engineering education since that time.

Two significant committee reports published in the *Journal of Engineering Education* of ASEE have had considerable effect upon other studies of engineering education. These were the reports of (1) the Committee on Aims and Scope of Engineering Curricula, published in 1940; and (2) the Committee on Engineering Education After the War, published in 1944. Both committees conceived of engineering education as comprised of two major divisions, the scientific-technological and the humanistic-social. They recommended (1) that each division consist of a designed sequence of courses throughout the four undergraduate years, (2) that increased emphasis be given to the humanistic-social division and to basic science, and (3) that some of the advanced technical subject matter be transferred to the postgraduate years.

The latter report advocated that plans be laid for the instruction of three major groups of students: (1) those who would follow the usual pattern of engineering programs and would constitute the majority of undergraduate engineering students; (2) those preparing for careers in the operation and management of industry; and (3) those who give evidence that completion of graduate courses will fit them for unusual scientific and creative accomplishments.

In 1949 ASEE appointed a committee to study methods of improving engineering teaching. This committee followed the procedure of the Wickenden study in that institutional committees were set up in 150 engineering colleges, and the report of the main committee was drawn in large part from reports of these institutional committees. The report was published in 1952 in the *Journal of Engineering Education*. The Committee felt that the most valuable feature of its work was not its report but the participation of between 1,000 and 1,500 teachers in 150 institutions in the studies which led to the report.

The American Society for Engineering Education

ASEE unites persons interested in education in all fields of engineering. It includes the Engineering College Research Council; the Engineering College Administrative Council; institutional members of several grades, comprising engineering colleges, industries, research institutes, and the like; an individual members, who may be any perso interested in engineering education. It operat through Nation-wide subject-matter divisions, na tional committees, and regional sections compos of all members in the region.

This society has led in all major developments engineering education. Its *Journal of Engineeri Education* (established in 1910) and other publica tions have won world-wide acceptance as reliab sources of information on the history of engineeri education and its current problems. Its Manpow Committee antedates by 3 years the Engineeri Manpower Commission.

Accreditation

By 1932 the growth in the number of enginee and engineering societies, and the increasing pro portion of college graduates among them, led to recognition of the need for setting up criteria fo qualifications for membership in the societies an for a better coordination of their activities directe toward the professional advancement of the enginee There was also need for at least a reasonable degr of uniformity in the accrediting procedures bei set up under the State licensing laws for engineer which were being adopted by many States. At th time 135 institutions were offering degrees in en gineering. Among them were wide differences i educational standards, curriculums, qualificatio of faculty members, and adequacy of facilities.

To meet these needs the six societies which ha participated in the Joint Committee on Engineerin Education in 1907, together with the Engineerin Institute of Canada and the National Council o State Boards of Engineering Examiners, establishe ECPD "To coordinate and promote efforts an aspirations directed toward the higher professiona standards of education and practice, greater so darity of the profession, and greater effectivenes in dealing with technical, social, and economi problems." ECPD is composed of three representatives from each of the eight societies mentione above. Engineering education has always been on of its major concerns and still is. The Committe on Education (originally the Committee on Engineering Schools) recommends to ECPD the accreditation of engineering curriculums. The committe made its first recommendation in 1937. At tha time ECPD accredited 374 curriculums for a limite time, and 71 provisionally, in a total of 107 of th 129 institutions which had been visited by inspectio teams. This committee has continued its activities, and as of September 1952 ECPD had fully or provisionally accredited 686 curriculums and 79 options in 149 institutions.

A résumé of the basic principles observed by ECPD in the accrediting process follows: (1) Accreditation is given to specific curriculums rather than to institutions as a whole, because of the variety of equipment and of faculty experience desirable in various fields of engineering. (2) To date only undergraduate curriculums have been accredited, although the desirability of accrediting graduate curriculums has been studied. (3) The purpose of accreditation, which applies only to curriculums leading to degrees, is to identify those institutions which offer professional curriculums in engineering worthy of recognition as such. (4) Inspection is made only upon the invitation of an institution. (5) Accreditation is based upon both qualitative and quantitative criteria, but no hard and fast standards have been formulated by ECPD. Rather, accreditation is based upon the over-all judgment of a qualified inspection committee which applies general criteria published in each annual report of ECPD.

ECPD originally intended to recognize only the 6 major curriculums, but pressure from the colleges and from the profession itself forced it to recognize additional curriculums, so that the first report recognized 14 different curriculums. ECPD committees have continued to resist the proliferation of curriculums, but the 1953 report lists accredited curriculums in each of the 21 fields mentioned earlier, and applications are pending before the committee for the recognition of 15 new curriculums.

Types of Schools

The baccalaureate degree in engineering is conferred by 210 institutions, of which 94 are controlled by State governments; 14 by national, territorial, or city governments; and 26 by 6 different church organizations; while 70 are private, nonsectarian institutions, and 6 institutions represent combinations of two of these classifications. In 155 institutions the engineering school forms a part of a college or university organization, while in 35 it is in a separately administered institution.

In 32 institutions, including 29 accredited by ECPD, the "cooperative plan" of engineering education is utilized for some or all students. This plan, inaugurated in 1906 at the University of Cincinnati, is defined as "An integration of classroom work and practical industrial experience in an organized program under which students alternate periods of attendance at college with periods of employment in industry, business, or government." The cooperative plan in nearly all cases requires 5 years for completion of an undergraduate curriculum.

Seventeen engineering colleges which do not operate on the cooperative plan require 5 years for the completion of an undergraduate curriculum in one or more fields. These curriculums in most cases have been lengthened to allow for the inclusion of more humanistic-social studies. All the other institutions, except in the cooperative plan curriculums, require 4 years.

Evening engineering education programs are offered in 47 institutions, principally for the benefit of persons employed during the daytime. The total enrollment in these programs in the fall of 1953 was 15,217, compared to 3,500 in 1924. Students may obtain bachelors' degrees in some of these programs in from 6 to 8 years, and such programs have been accredited by ECPD in 6 institutions.

Enrollments

Table 21 traces the history of undergraduate and graduate engineering enrollments and degrees from

Table 21.—Engineering enrollments and degrees, 1860 to 1953

Year	Undergraduate			Graduate		
	No. of schools	Enrollments	Degrees	No. of schools	Enrollments	Degrees
1860..	--------	--------	31	--------	--------	--------
1870..	--------	1,400	120	--------	--------	--------
1880..	34	--------	159	--------	--------	--------
1890..	--------	1,195	--------	--------	--------	--------
1900..	--------	11,415	671	--------	--------	--------
1910..	--------	[1] 30,337	1,683	--------	--------	27
1920..	--------	51,908	4,400	--------	--------	165
1930..	--------	74,000	7,371	--------	--------	718
1940..	147	103,270	13,808	92	4,648	1,460
1943..	143	[2] 45,404	14,145	76	[2] 2,657	724
1945..	136	[2] 47,150	4,060	79	[2] 3,946	515
1947..	143	234,484	18,592	99	14,210	3,217
1949..	180	201,927	45,200	119	17,785	5,215
1950..	190	161,592	52,732	123	18,670	5,398
1951..	192	145,997	41,893	124	19,640	5,742
1952..	193	156,080	30,286	118	20,469	4,727
1953..	210	171,725	24,164	126	21,608	4,335

[1] Probably includes graduate students.

[2] Civilian students only.

Source: Data collected from the 1918 report of C. R. Mann and reports of the Office of Education and of ASEE.

1860 to 1953. Steady growth is indicated up to 1940, followed by a severe drop during World War II. After the war undergraduate enrollment rose sharply to an all-time high in 1947, when it declined for 4 years and then turned upward. Undergraduate degrees reached a peak in 1950; they declined to a low point in 1954, when 22,264 were conferred.

Graduate students in engineering were not important numerically before World War I. Following the war the rapid growth in scientific knowledge and its increasing application to engineering and technology created a need for graduate study. Graduate enrollment increased until 1940, decreased markedly during World War II, and has risen steadily since.

Preprofessional Education

Almost without exception students may enter engineering colleges directly from high school. A study conducted in 1949–51 indicates little change in admission requirements from those reported for 1924–25 in the Wickenden Report. The number of prescribed units ranged from zero in 3 institutions to 16 in one institution, with a median of 8 specified as requirements. Typical requirements for admission to engineering college are: English, 3 units; history or social studies, 1 unit; algebra, 1½ units; plane geometry, 1 unit; solid geometry, ½ unit; science (with lab. work), 1 unit; additional work in any of above-listed subjects, 3 units; other high school subjects, 4 units. Some institutions require, and all recommend, an additional one-half unit of algebra, one-half unit of trigonometry, and 1 unit of science.

There has been discussion of the desirability of requiring the completion of 2 years of college education for admission to the first year of engineering education, but no institution is known to have established this requirement up to the present time. However, a start in this direction has been made in at least 29 engineering colleges which have set up cooperative arrangements with numbers of liberal arts colleges under which a student may attend a liberal arts college for 3 years, taking programs agreed upon between the 2 institutions, and then attend the engineering school for 2 years. If his work is satisfactorily completed the student receives the bachelor of arts degree from the liberal arts school at the end of his fourth college year, and at the end of the fifth year the bachelor of science degree in engineering from the engineering school.

The rapid increase in recent years in the number of junior and community colleges has resulted in an increase in the number of students who enter engineering colleges after 2 years in a junior college o liberal arts college. A study in the Office of Educa tion showed that in the fall of 1953, in institutio which enrolled 92 percent of the undergraduate eng neering students of the country, students admitte by transfer from nonengineering curriculums consti tuted 4.0 percent of the sophomore class and 3 percent of the junior class, with individual institu tions reporting as high as 28 percent of sophomor and 56 percent of juniors. The numbers of su transfers will probably increase in the future, whi will make more acute a problem already facing bo the engineering schools and the junior colleges.

Professional Curriculums and Degrees

Engineering curriculums are offered in all of th 21 fields previously listed, and in several othe which have not as yet received accreditation. Th various engineering curriculums differ from on another chiefly in the specialized subjects studie during the last 2 years. In most institutions th freshman year is the same for all fields of engineering and there are no radical differences in the freshma year in any of the accredited institutions. Generally a large part of the work in the sophomore year i common to all curriculums. The specializatio which begins in a limited way in the sophomore yea is intensified in the junior year and continues throug the senior year.

Engineering curriculums are designed to give th student a solid foundation in the basic sciences o mathematics, physics, and chemistry, which underli all fields of engineering, and in such fundamenta engineering subjects as drawing, surveying, and mechanics. Sufficient humanistic-social studies ar included to enable the graduate to take his place a a citizen and to understand the social, moral, and political implications of his technical work. Some study of fields of engineering related to his own specialty helps him to understand the interrelation of the different fields. And finally he studies some of the specialized applications of basic science and general engineering to his own special field of engineering, so that he will understand the general method of attack on problems in his field and be able to adapt himself to a variety of situations.

The interdependence and interrelations of the various fields of engineering are exemplified by the ease with which engineers educated in one branch of engineering are able to work in other fields. There is a growing tendency in industry to be little concerned with which particular branch of engineering a student has followed, so long as he has had a sound foundation in basic science and engineering.

Graduate Study Leading to Advanced Degrees

Of the 210 institutions which conferred bachelor's degrees in engineering in 1953, 126 institutions conferred 3,635 master's degrees in engineering, and 57 institutions conferred 592 earned doctorates. ECPD has not yet accredited graduate curriculums. Programs of graduate students are designed to meet individual requirements, and it is doubtful whether any standard curriculums can be organized in such a highly specialized field. A master's degree ordinarily requires at least 1 year of full-time study beyond a bachelor's degree, and the doctorate requires 3 or more years of graduate study and a dissertation. With the growing need of industry for persons with advanced training in engineering and science, it seems likely that the enrollments and numbers of degrees granted at these levels will continue to increase.

Postcollege Education Not Leading to Advanced Degrees

Industrial processes have become so complicated in recent years that many industries and governmental agencies, particularly the larger and more complex ones, are finding it desirable to give young engineers special training applicable to the processes and products of the particular industry. Such training is given in a number of different ways, including apprentice courses, granting of time for graduate study in colleges, and the conduct of special courses by older and more experienced engineers in the company. Some of this post college training results in credit toward degrees, but much of it does not.

Current Educational Problems

A few of the problems of engineering educators are outlined in the following paragraphs. No attempt has been made to cover all educational problems in engineering, nor to supply the answers to the problems. Members of engineering faculties, individually, as faculty groups, and through ASEE are working on all of these problems, many of which have no single final answer, but instead call for continued study by members of the profession.

Admission requirements.—As previously pointed out, a wide variation exists among engineering colleges in the high school subjects required for admission. Engineering is based upon mathematics and the physical sciences, and an interest in and an aptitude for these fields is an important indicator of success in the profession. However, many studies have indicated that the pattern of high school subjects bears little, if any, relationship to success in an engineering college. General quality of high school work seems to be a much better indicator of success in college than the pattern of subjects studied. Beyond a sound preparation in basic mathematics which is essential as a foundation for college mathematics, there seems little point in a student taking a full scientific program in high school. There are a growing number of engineering schools which advise the high school student to build a balanced background of general knowledge, and to make a careful study of his individual interests and aptitudes. Such schools generally make their admission requirements flexible enough so that a capable student may enroll even though his interest in engineering develops late in his high school course.

There is need for a thoroughgoing study of the significance of patterns of high school subjects, of the articulation between subject matter required for admission and courses taught in college, and of the desirability of giving more consideration to the general mental ability of a prospective student, with the possibility of waiving certain subject-matter requirements for students of high mental ability.

Selection of students.—It has been estimated that the percentage of college students electing engineering has reached a maximum but that the need for engineers will increase more rapidly than the total population This estimate, which is probably basically sound, the present shortage of engineers, and the high cost of engineering education, stress the need for early identification of high school students who are qualified by aptitude and ability to profitably pursue an engineering education, of encouraging such students to enroll, and of making it possible for them to do so. This calls for a high degree of cooperation between the engineering colleges and the high schools, not in a program of recruitment as such, but in an effort to see to it that young people are made aware of their own abilities and interests and of opportunities open to them in the light of these abilities and interests. It calls for the development of testing programs, both of aptitude and ability. It calls for scholarships such as those sponsored by the Science Talent Search and other programs, and invites serious consideration of a program of undergraduate Federal scholarships. Closely associated are the problems of improving high school programs and the teaching of high school subjects, so that qualified students may secure the proper foundation for the study of engineering. Some attention has already been given to the problem of making high school teaching in science and mathematics attractive enough, financially and otherwise, to induce well-qualified persons to teach these important foundation subjects.

The curriculum.—The ECPD Committee on Engineering Schools stated in its annual report for 1950 that the objective of an engineering education is to furnish the technical background and general training for the process of analysis and synthesis essential to "designing," using the word in broad terms, involving the development within the student of original, resourceful, creative ability. An ASEE committee stated in 1952 that the objective of engineering education should be to give the engineer adequate training in those subjects which are least likely to become obsolete, and which will support a growing professional career years after leaving school.

ASEE in 1952 appointed a Committee on Evaluation of Engineering Education, which has been organized and is using the same general pattern of institutional committees followed in the Wickenden study, previously mentioned. The institutional committees are asked to examine present programs and to study the needs of engineering education over the next 25 years. The institutional committees will need to concern themselves with some of the following problems.

Specialization in undergraduate engineering education has, in the opinion of many, gone too far. They believe that the common core of engineering curriculums, the basic applications of science and mathematics, should be extended. One engineering dean recommends a core curriculum covering all but 7 credit hours of the first 3 years, followed by a fourth year in which the student chooses between the professional or the terminal stem of the engineering curriculum. In either case, he is to receive the undesignated degree of bachelor of engineering. Those following the professional stem would anticipate a fifth year, leading to the designated degree (CE, ME, etc.). A graduate dean would recognize only two kinds of engineering, physical and chemical, with the possibility that physical engineering might upon further study be divided into two parts, one based on electricity and magnetism, the other on mechanics and heat.

The humanistic-social content of engineering curriculums has long been a subject of much concern to engineering educators. Many studies have been made by individual institutions and by committees of ASEE, and many articles on it have appeared in the *Journal of Engineering Education*. Although some opposition has been expressed, many engineering educators believe that the recommendations of the Committee on Engineering Education After the War (1944, previously mentioned) are sound, and should, in general, be followed. Several institutions have adjusted their curriculums in accordance with these recommendations, and others are considering such adjustment.

The basic science content of engineering curriculums also needs study. While it is impossible to foresee exactly what techniques will be in use by engineers 25 years from now, it is certain that these techniques will be based upon principles now available in the basic sciences. It is also safe to conclude that the problems facing engineers will continue to increase in difficulty and will require a more and more fundamental approach. It is therefore apparent that the basic science content of engineering curriculums should be strengthened.

The problems outlined above have naturally led to consideration of the addition of a fifth year to the normal engineering curriculum. The 17 institutions which have adopted one or more 5-year curriculums constitute only 8 percent of the engineering colleges, and general sentiment favors continuing the 4-year curriculum for most engineers, with graduate work for the small number who wish to study further.

The cooperative plan.—Reference has already been made to the cooperative plan, which is regarded as successful by most of the institutions using it. The plan, when properly organized and efficiently administered, has advantages to the student, to the institution, and to the employer. Many engineering colleges have been deterred from using the cooperative plan because of its greater cost, the increased length of time required to receive a degree, the difficulty of finding suitable student employment in depression periods, and possible complications with labor unions. However, under proper local conditions the plan has great possibilities, and might well be seriously considered by more institutions. A program of evening instruction may to a certain extent fulfill some of the objectives of a cooperative program, but the length of time for a degree is greater in this method than in the cooperative system.

Articulation with the junior college.—The rapid growth in the number and size of junior colleges and community colleges will increase the problems of the engineering colleges in absorbing graduates of these institutions into engineering curriculums. Problems arise in the transfer of these students to engineering colleges because (1) most junior colleges require for graduation less than half as many semester hours as do engineering colleges; (2) few junior colleges can afford to offer the specialized engineering courses which are required in the first 2 years of the usual engineering curriculum; and (3) junior college courses in mathematics, chemistry, and physics are apt to be qualitatively or quantitatively insufficient to give the junior college graduate an adequate preparation for the specialized courses in the last 2 years of engineering curriculums, which creates difficulties in the evaluation of credits. These problems have aroused considerable interest, and many engineering schools have taken steps to promote a better articulation with junior colleges.

Improvement of engineering teaching.—In any effort to improve education, the key factor is the teacher. This fact is recognized by the engineering education profession in many ways, among them being (1) the series of summer schools for engineering teachers which have been sponsored by ASEE since 1927, and (2) the recent report of the ASEE Committee on the Improvement of Engineering Teaching. The study from which this report stemmed was designed to bring about discussion of teaching methods and ways of learning, to consider how to prepare students to meet new situations with skill, resourcefulness, and leadership, and to develop in the student the desire to continue to learn after graduation.

Research.—The close relationship between research and teaching has long been recognized. A research program is an essential part of graduate education. It also makes faculty positions attractive to scientifically minded men and serves as a stimulus to instruction.

Research in engineering colleges on the applications of science to new developments and processes has greatly expanded during the past decade and has benefited the Nation, the institutions, and the faculty members and students involved. Such research falls into two broad categories: (*a*) Basic research conducted by faculty members and graduate students to advance knowledge—generally supported by institutional resources or grants from foundations; and (*b*) that sponsored by Government agencies or private industries.

The recent expansion of sponsored research has brought problems to the colleges, among them being: (*a*) The danger that too large a proportion of the time of good teachers may be assigned to research projects; and (*b*) the tendency to restrict research to projects of interest to a given agency or company, to the detriment of more basic or fundamental research, generally considered the proper province of the colleges.

There is a need for engineering colleges to convince industry that its support of truly basic research is warranted on a much larger scale than heretofore.

Technical institutes.—The engineering profession has long recognized the importance of an adequate number of well-trained subprofessional personnel who, serving as engineering aides, technicians, etc., can relieve engineers of much of the technical detail associated with their work, leaving them free for the strictly professional aspects. The Wickenden survey of 1923–29, and many studies since, have indicated the need in industry of from three to five such persons for every professionally trained engineer. However, the number of persons being trained at this level is even smaller than the number being trained for work as professional engineers.

Recognition of the need for technical institutes has been indicated by the establishment of a Division of Technical Institutes in ASEE, and by the accreditation by ECPD of 77 technical institute programs in 26 institutions. This accreditation is based to a degree upon the criteria for engineering colleges, but with due allowance for the different types of curriculums and objectives. There is need for much further study of this type of education, and for clear enunciation of policies with respect to the relationships which should exist between technical institutes and engineering colleges, and the degree of articulation which should exist among their curriculums.

Schools of Engineering

The following are the schools in the United States which are listed in the United States Office of Education Directory of Higher Education and which reported that they conferred degrees in engineering in the academic year 1952–53. Those marked with the asterisk (*) are listed in the 1953 report of the Engineers' Council for Professional Development as accredited in one or more engineering curriculums. The first figure following the name of the school is the total undergraduate engineering enrollment in the fall of 1953. The second figure is the total graduate engineering enrollment.

Alabama

Alabama Polytechnic Institute,* 1,668, 16.
University of Alabama,* 1,246, 16.

Alaska

University of Alaska,* 84, 0.

Arizona

University of Arizona,* 811, 111.

Arkansas

Arkansas State College, 51, 0.
John Brown University, 58, 0.
University of Arkansas,* 593, 35.

California

California State Polytechnic College, 1,119, 0.
California Institute of Technology,* 358, 169,
College of the Pacific, 26, 0.
Fresno State College, 194, 0.
Loyola University of Los Angeles, 176, 0.
San Diego State College, 458, 0.
San Jose State College, 478, 0.
University of Santa Clara,* 254, 0.
Stanford University,* 750, 302.
U. S. Naval Postgraduate School,* 428, 74 (estimated)
University of California (Berkeley),* 1,432, 226.
University of California (Los Angeles),* 924, 259.
University of Southern California,* 1,532, 266.

Colorado

Colorado A. & M. College,* 440, 24.
Colorado College, 46, 0.
Colorado School of Mines,* 813, 63.
University of Colorado,* 1,985, 136.
University of Denver,* 307, 3.

Connecticut

Hillyer College, 585, 0.
U. S. Coast Guard Academy,* 523, 0.
University of Bridgeport, 384, 0.
University of Connecticut,* 897, 170.
Yale University,* 598, 116.

Delaware

University of Delaware,* 427, 263.

District of Columbia

Catholic University of America,* 248, 65.
George Washington University,* 446, 14.
Howard University,* 223, 0.

Florida

University of Florida,* 1,563, 44.
University of Miami, 978, 0.

Georgia

Georgia Institute of Technology,* 3,480, 189.
University of Georgia, 65, 5.

Hawaii

University of Hawaii,* 326, 0

Idaho

University of Idaho,* 563, 9.

Illinois

Aeronautical University, Inc., 27, 0.
Bradley University,* 391, 2.
Chicago Institute of Technology, 897, 0.
Fournier Institute of Technology, 90, 0.
Illinois Institute of Technology,* 4,743, 591.
Millikin University, 60, 0.
Northwestern University,* 813, 177.
Quincy College, 33, 0.
University of Illinois,* 4,082, 515.

Indiana

Evansville College, 273, 0.
Indiana Technical College, 960, 0.
Purdue University,* 4,383, 325.
Rose Polytechnic Institute,* 332, 3.
Tri-State College, 1,134, 0.
University of Notre Dame,* 1,260, 102.
Valparaiso Technical Institute, 258, 0.

Iowa

Iowa State College,* 2,417, 116.
State University of Iowa,* 400, 68.

Kansas

Kansas State College,* 881, 24.
Municipal University of Wichita,* 547, 19.
University of Kansas,* 1,072, 93.

Kentucky

University of Kentucky,* 989, 34.
University of Louisville,* 497, 60.

Louisiana

Louisiana Polytechnic Institute,* 614, 0.
Louisiana State University,* 1,350, 30.
South Western Louisiana Institute, 403, 0.
Tulane University,* 436, 15.

Maine

University of Maine,* 752, 9.

Maryland

Johns Hopkins University,* 869, 224.
University of Maryland,* 942, 399

Massachusetts

Bradford Durfee Technical Institute, 137, 0.
Harvard University,* 114, 155.
Lowell Technological Institute,* 261, 5.
Massachusetts Institute of Technology,* 2,486, 1,121.
Massachusetts Maritime Academy, 103, 0.
University of Massachusetts,* 631, 21.
New Bedford Institute of Textiles and Technology, 224, 0.
Northeastern University,* 2,096, 731.
Tufts College,* 547, 4
Worcester Polytechnic Institute,* 711, 18

Michigan

Detroit Institute of Technology, 438, 0.
General Motors Institute, 1,878, 0 (estimated).
Lawrence Institute of Technology, 1,259, 0.
Michigan College of Mining and Technology,* 1,186, 16.
Michigan State College,* 1,549, 58.
University of Detroit,* 1,473, 0.
University of Michigan,* 1,973, 459
Wayne University,* 1,145, 204.

Minnesota

University of Minnesota,* 2,058, 327.

Mississippi

Mississippi State College,* 701, 2.
University of Mississippi,* 180, 1.

Missouri

Missouri School of Mines,* 1,172, 49.
St. Louis University,* 460, 160.
University of Missouri,* 853, 24.
Washington University (St. Louis),* 743, 183.

Montana

Montana School of Mines,* 255, 8.
Montana State College,* 547, 16.

Nebraska

University of Nebraska,* 824, 9.

Nevada

University of Nevada,* 187, 3.

New Hampshire

Dartmouth College,* 274, 37.
University of New Hampshire,* 465, 3.

New Jersey

Fairleigh Dickinson College, 454, 0.
Newark College of Engineering,* 2,247, 685.
Princeton University,* 533, 118.
Rutgers University,* 479, 127.
Stevens Institute of Technology,* 796, 963.

New Mexico

New Mexico College of Agriculture and Mechanic Arts,* 582, 33.
New Mexico Institute of Mining and Technology, 42, 0.
University of New Mexico,* 562, 129.

New York

Alfred University,* 197, 8.
City College of the City of New York,* 4,165, 330.
Clarkson College of Technology,* 778, 7.
Columbia University,* 232, 993.
Cooper Union,* 699, 0.
Cornell University,* 1,661, 147.
Manhattan College,* 865, 0.
New York Maritime Academy, 298, 0.
New York University,* 2,287, 931.
Polytechnic Institute of Brooklyn,* 3,187, 1,618.
Pratt Institute,* 221, 0.
Rensselaer Polytechnic Institute,* 2,304, 193.
Syracuse University,* 550, 480.
Union College,* 285, 57.
University of Buffalo, 1,180, 187.
University of Rochester,* 207, 42.
U. S. Merchant Marine Academy, 527, 0.
Webb Institute of Naval Architecture,* 63, 12.

North Carolina

Agricultural and Technical College of North Carolina, 206, 0.
Duke University,* 474, 0.
North Carolina State College,* 1,844, 104.
University of North Carolina, 0, 10.

North Dakota

North Dakota Agricultural College,* 556, 0.
University of North Dakota,* 431, 10.

Ohio

University of Akron,* 381, 0.
Antioch College, 106, 0.
Case Institute of Technology,* 1,200, 417.
Fenn College,* 1,118, 0.
Ohio Northern University, 120, 0.
Ohio State University,* 2,504, 440.
Ohio University,* 585, 0.
University of Cincinnati,* 1,276, 205.
University of Dayton,* 546, 0.
University of Toledo,* 1,180, 0.
Youngstown College, 722, 0.

Oklahoma

Oklahoma A. & M. College,* 1,322, 106.
University of Oklahoma,* 1,845, 53.
University of Tulsa,* 748, 26.

Oregon

Oregon State College,* 1,165, 27.
University of Portland, 172, 0.

Pennsylvania

Bucknell University,* 271, 3.
Carnegie Institute of Technology,* 1,751, 184.
Drexel Institute of Technology,* 1,456, 261.
Grove City College, 168, 0.
Lafayette College,* 617, 0.
Lehigh University,* 1,550, 79.
Pennsylvania Military College, 165, 0.
Pennsylvania State University,* 2,886, 213.
Philadelphia Textile Institute, 217, 0.
Swarthmore College,* 98, 0.
University of Pennsylvania,* 381, 778.
University of Pittsburgh,* 1,672, 595.
Villanova University,* 627, 94.

Puerto Rico

University of Puerto Rico, 679, 0.

Rhode Island

Brown University,* 272, 24.
Rhode Island School of Design, 67, 0.
University of Rhode Island,* 425, 11.

South Carolina

The Citadel,* 391, 0.
Clemson Agricultural College,* 1,174, 14.
University of South Carolina,* 512, 0.
South Carolina State College, 34, 0.

South Dakota

South Dakota School of Mines,* 461, 9.
South Dakota State College,* 389, 3.

Tennessee

University of Chattanooga, 139, 0.
Tennessee Agricultural and Industrial State University, 93, 0.
Tennessee Polytechnic Institute, 395, 0.
University of Tennessee,* 1,091, 127.
Vanderbilt University,* 473, 4.

Texas

A & M College of Texas,* 2,577, 78.
Lamar State College of Technology, 572, 0.
Prairie View Agricultural and Mechanical College, 96, 0.
Rice Institute,* 190, 10.
St. Edwards University, [illegible]
Southern Methodist University,* 382, 345.
Texas College of Arts and Industries,* 297, 3.
Texas Technological College,* 1,134, 5.
Texas Western College,* 455, 0.
University of Houston,* 1,662, 173.
University of Texas,* 2,086, 140.

Utah

Utah State Agricultural College,* 343, 16.
University of Utah,* 1,071, 70 (estimated).

Vermont

Norwich University,* 259, 0.
Vermont University,* 274, 0.

Virginia

University of Virginia,*524, 273.
Virginia Military Institute,* 455, 0.
Virginia Polytechnic Institute,* 1,785, 57.

Washington

Gonzaga University, 247, 0.
St. Martin's College, 22, 0.
Seattle University, 276, 0.
State College of Washington,* 738, 10.
University of Washington,* 1,492, 186.
Walla Walla College, 58, 0.

West Virginia

Davis and Elkins College, 94, 0.
Marshall College, 190, 0.
West Virginia Institute of Technology, 138, 0.
West Virginia University,* 693, 37.

Wisconsin

Marquette University,* 1,245, 0.
Milwaukee School of Engineering, 886, 0.
University of Wisconsin,* 2,160, 344.
Wisconsin Institute of Technology, 140,0.

Wyoming

University of Wyoming,* 452, 9.

Total enrollment:
Undergraduates in 210 schools (men, 170,909; women, 816) 171,725.
Graduate students in 126 schools (men, 21,498; women, 110), 21, 608.

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10. Education in Forestry

By HENRY CLEPPER[*]

FORESTRY is the art, science, and business of managing woodland for the continuous production of forest goods and services. The forester is a professional man, educated and trained in the protection, administration, harvesting, reproduction, and utilization of the forest resource and its products. His training is based on a combination of biological, economic, engineering, and social sciences.

The Forestry Profession

Toward the close of the 19th century there were less than a dozen technically trained foresters in America. Several were citizens who had obtained their education in Europe, for then no colleges and universities in the United States offered instruction in forestry. The others were Germans who had emigrated to America to practice their profession. The first degree in forestry granted by an American university (Cornell) was awarded in 1900.

From such a small beginning, the forestry profession has grown to the number (March 1954) of about 15,000. That is, there are in America 15,000 foresters who are practicing their profession or working in closely related fields such as wildlife management, range management, and soil conservation.

These foresters are engaged in a multitude of occupations. About 4,800 are employed by various Federal agencies, the largest number being in the Forest Service in the United States Department of Agriculture. State agencies employ 1,500, and county and municipal agencies, 200. Approximately 700 foresters are working in educational institutions, including extension and research. But the largest number of foresters—6,200—are in private and industrial employment, especially in the forest products industries. Finally, approximately 1,600 foresters are working in miscellaneous fields outside the foregoing classifications.

Twenty-five years ago the Federal Government, notably the Forest Service, was the largest employer of foresters. During the past decade, and especially since the end of World War II, a great expansion in industrial forest practice has occurred. In consequence, most of the current forestry graduates are going into private work.

The demand for foresters has risen. In general, while the supply has kept pace with demand, there are actually some regions, such as the Southeastern States, where in recent years the supply of foresters available for beginning positions has not been sufficient to fill the demand.

Society of American Foresters

Organized in 1900 in Washington, D. C., with 7 charter members, the Society of American Foresters in March 1954 had a membership of 9,600. In helping to develop a new profession the society has benefited from the aid and guidance of senior organizations, and in representing the interests and standards of forestry it has tried always to be worthy of its place in the family of professional and scientific societies. The executive body of the society is the council composed of 11 members.

In 1913 the society became an affiliated society of the American Association for the Advancement of Science, with representation on the AAAS Council, and since that year it has enjoyed working relationships with other professional and scientific bodies. It has long been a member of the Division of Biology and Agriculture of the National Research Council. When the American Institute of Biological Sciences was organized, the society was admitted to affiliated membership.

The *Journal of Forestry*, published monthly by the society, has a circulation of 10,500. It is one of the world's best-known technical forestry periodicals. The society also publishes technical books and bulletins. A recent bulletin is *Forest Cover Types of North America.* A recent book is *Forestry Terminology*, a glossary of technical terms used in forestry and related specializations. Another book, published in connection with the society's semicentennial, is *Fifty Years of Forestry in the U. S. A.*, from which many of the data for this chapter were drawn. A work in progress is the compilation of a *Forestry Handbook*, to be published soon.

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[*] Executive Secretary, Society of American Foresters.

All members of the Society of American Foresters engaged or interested in professional education hold membership in the society's Division of Education. This is 1 of 11 subject divisions that schedule yearly meetings in connection with the annual meeting of the society.

Another group concerned primarily with administrative and policy matters affecting professional education is the Council of Forestry School Executives, established in 1946. Composed of the heads of the 26 accredited schools, this council holds an annual meeting at the same time as the national meeting of the Society of American Foresters. Inasmuch as the officers change yearly, this council may be addressed in care of the society, 425 Mills Building, 17th Street and Pennsylvania Avenue NW, Washington 6, D. C.

Evolution of Forestry Education

During the last quarter of the 19th century, lectures on forestry and tree culture were given in at least 22 land-grant colleges and several universities, mostly by members of the faculties of botany and horticulture. These lectures, usually offered to students of agriculture, stressed tree planting, farm woodlot management, and the influence of forests on climate and stream flow. There was a growing interest in forestry education, but no body of courses was offered which might prepare workers for a career.

The foundation for professional training was in the making, however. Two institutions began offering instruction in 1898: The New York State College of Forestry at Cornell University and the Biltmore Forest School in North Carolina. Both schools were subsequently discontinued. In 1900 Yale University set up a full forestry curriculum. Yale now enjoys the distinction of having the oldest forestry educational institution in continuous operation in the Western Hemisphere.

Although technical training in forestry had been offered by certain European institutions of higher learning for more than a hundred years prior to the establishment of the first American school, and although the first schools on this continent were headed by German foresters, professional forestry education in America was characterized by a fresh and independent outlook from the start. For one thing, the basic aim of the United States schools was to train men for the practice of forestry as a profession—a profession just coming into existence. For another, these schools were different from their European prototypes because their essential purpose was to bring about the management and conservative use of our American forests.

During the period 1898–1914, 24 schools of forestry were established in the United States. This development resulted from the spread of Federal and State forestry activities, and the attraction of forestry as a career to young men.

With the creation of so many new schools, leaders in the profession were apprehensive about the maintenance of educational standards. As early as 1909 a committee was set up to study this matter and to recommend a forestry curriculum. A conference in 1911 was attended by representatives of Canadian schools as well as by those from United States institutions. A report presented at this conference emphasized the necessity of maintaining high standards in professional forestry training. This report had a profound influence on forestry education. Although there were many deviations from the curriculum it suggested, its broad recommendations were generally followed. The period was marked by a shift in emphasis from subjects originally adapted from European experience to those that better served American needs. In this change all schools were influenced by the character of examinations given by the United States Civil Service Commission to recruit junior foresters for positions in the Federal Government.

By the period of the First World War, 20 schools of forestry were in operation. Most of these were in land-grant institutions and offered a 4-year undergraduate degree. Yale had the only wholly graduate school. By 1929, when the "forest education inquiry" (discussed under Accreditation) was launched, there were 25 schools of collegiate grade offering professional instruction in forestry.

Surveys and Accreditation

During the 1920's several prominent forestry educators proposed that a study be made of "the education of men preparing for the profession of forestry." This study was made possible by a grant of $30,000 to the Society of American Foresters from the Carnegie Corporation of New York. In 1929 the society appointed a committee to conduct a "forest education inquiry." During the following 2 years an exhaustive investigation was carried on, resulting in the book *Forest Education* by Graves and Guise, published in 1932 by the Yale University Press.

Using this study as a foundation, the council of the society next authorized an examination of each of the schools of forestry to determine the minimum standards of training essential to qualify graduates for membership in the society in the junior professional grade. This survey, begun in 1933 by a committee on accrediting, resulted in the establishment of a list of 14 approved schools of forestry. Six additional schools were listed as eligible for approval provided certain standards were met. Thus, the principle of accrediting was first applied to forestry education in America. An important product of this survey was the publication by the society of a book, *Professional Forestry Schools Report*, prepared by H. H. Chapman of Yale University. Published in 1935 by the Society of American Foresters, this report (now out of print) gave the comparative status of institutions that offered instruction in professional forestry for the school year 1934–35.

The committee on accrediting has continued as a permanent standing committee of the Society of American Foresters. It examines the schools and makes recommendations to the council of the society, which takes official action concerning accreditation. The most recent examination of all the schools of forestry was undertaken during 1950.

The 26 accredited colleges and universities provide professional training of a standard to warrant the admission of graduates in approved curriculums to membership in the society without further proof of competence. By "approved curriculums" is meant a body of instruction containing five basic required courses—silviculture, forest management, forest protection, forest economics, and forest utilization.

Certain schools of forestry specialize in adjunctive curriculums, such as forest engineering, range management, wildlife management, forest recreation, wood technology, and wood utilization. Since, in some institutions, these specialized curriculums do not include the essential five-course core of forestry previously mentioned, the council of the society, in its accrediting procedure, examines and approves individual curriculums as well as accredits the institution itself.

It is not the intention of the Society of American Foresters that the system of accrediting shall be a straitjacket confining forestry education. Accrediting of forestry curriculums grows out of the society's sense of responsibility to assure the American public that graduates in forestry shall be adequately trained for the practice of forestry. As a concrete manifestation of its interest in accrediting as a public service, the Society of American Foresters has assumed, and will continue to assume, the full burden of the costs of accrediting.

In accordance with the efforts of the National Commission on Accrediting to simplify accrediting procedures and reduce the cost to and workload of the institutions evaluated, the Society of American Foresters, along with numerous other professional societies, has agreed to undertake its future accrediting activities in cooperation with the several regional associations of colleges and universities.

Schools and Enrollments

There are 36 colleges and universities in the United States offering instruction in forestry at the professional level. Two of these—Duke and Yale Universities—offer graduate degrees only. Of the 36 institutions, 26 are accredited by the Council of the Society of American Foresters. The remaining 10 have not yet met the standards for accrediting.

Annually, the *Journal of Forestry* publishes statistics from all the schools of forestry including the number of students enrolled.

The first records showed 19 undergraduates in 1903–04. (See table 22.) The number gradually increased to 904 during 1914–15, then declined during the First World War. Following the war, enrollments gradually rose until 1929–30, when there were 2,123 undergraduates registered. With the establishment of the Civilian Conservation Corps in 1933 and other Federal conservation activities of that period, the demand for foresters resulted in a marked rise in enrollment, to a high point of 6,067 in 1937–38. Enrollments then gradually fell off until, during World War II, the schools of forestry were almost depleted of students. The low point was reached during the academic year 1943–44 when only 503 were enrolled. Again following World War II, enrollments increased. In 1945–46 there were 1,473 undergraduates; the next year there were 7,010; and during the school year 1948–49 enrollment reached an all-time high of 8,212. Since 1945 seven additional schools of forestry have been established.

The number of women enrolled in schools of forestry is small. There were 16 women enrolled during the academic year 1953–54.

Table 22.—Undergraduate and graduate enrollment in schools of forestry in United States, by intervals 1903–54

Year	Number of schools [1]	Under-graduate	Graduate [2]	
			For master's degree	For doctor's degree
1903–04	10	19	----------	----------
1907–08	15	143	----------	----------
1912–13	22	637	----------	----------
1917–18	22	560	----------	----------
1922–23	21	1, 347	----------	----------
1927–28	25	1, 957	----------	----------
1932–33	25	2, 388	174	32
1937–38	24	6, 067	150	34
1942–43	26	2, 326	30	24
1947–48	29	7, 454	339	80
1953–54	35	4, 909	349	139

[1] Undergraduate enrollment is not available prior to the school year 1903–04.
[2] Graduate enrollment is not available for the period 1903–31.

Curriculums and Degrees

The minimum entrance requirement for admission to undergraduate schools of forestry is graduation from a 4-year high school or comparable preparatory school. In some instances, unless the applicant is a graduate of an approved high school in the upper two-fifths of his class, an entrance examination or college aptitude test may be required. Entrance requirements vary widely; some institutions are more liberal than others.

Although education in forestry varies in detail from institution to institution, the professional curriculum in each of the accredited schools has a solid foundation of five essential courses. These courses are (1) Silviculture, based on plant ecology, botany, plant physiology, dendrology, and soils; (2) forest protection from fire, insects, and disease; (3) forest management, based on mensuration, surveying, and mathematics through trigonometry; (4) forest economics; and (5) forest utilization. The degree offered on completion of the 4-year undergraduate curriculum is bachelor of science in forestry.

Since thorough coverage of the necessary foundation subjects and these professional subjects is practically impossible in the usual 4 years, all the accredited schools offer an additional year, leading to the master's degree, in which the student's training can be broadened and intensified. In fact, Yale University and Duke University operate wholly o the graduate basis, and, in addition to the doctor o philosophy, offer the comparatively new degree o doctor of forestry. The master's degree is increa ingly recognized as essential for full profession training, and the doctor's degree for research a teaching.

Table 23.—Degrees granted at schools of forestry in the Uni States, by intervals 1900–1953

Year	Under-graduate degrees	Master's degrees	Doctor's degrees[1]
1900	1	0	--------
1901	5	0	--------
1905	9	34	--------
1910	61	48	--------
1915	124	35	--------
1920	160	25	--------
1925	280	44	--------
1930	308	69	--------
1935	423	58	1
1940	1, 072	105	9
1945	51	18	7
1950	2, 321	275	2
1953	1, 026	127	2

[1] The number of doctor's degrees granted prior to 1935 totaled 53. A break down by years is not available.

Since the first degree in forestry was awarded i 1900, the forestry schools of the United States have granted approximately 21,450 undergraduate and 3,740 master's degrees. The exact number of doctor's degrees awarded during the past half century is not known; such statistics as are available indicate a total of 135. In 1953, 24 doctor's degrees were granted. (See table 23.)

Continuation Education

Some schools of forestry offer short courses in specialized fields. Frequently, at land-grant colleges and universities such courses are given in cooperation with the Extension Service. These courses may vary in length from a few days to several weeks. They may cover such technical subjects as aerial photointerpretation, photogrammetry, and statistics; or vocational subjects of primary value to industrial employees, such as lumber merchandising, wood seasoning and kiln drying, lumber grading, gluing, and wood finishing.

Subprofessional Education

In addition to the professional schools of forestry there are several institutions that offer courses of collegiate grade but not leading to a degree. These courses are frequently given in connection with agricultural curriculums, mainly for the benefit of future farmers who will manage their own woodland or for those training for agricultural extension work or for teaching.

A few institutions, called ranger schools, offer a type of training designed to prepare men for subordinate positions in forestry. Usually of 1 or 2 years in duration, these courses include technical subjects but are largely vocational. The best known and the oldest of these institutions is the Ranger School at Wanakena, N. Y., a division of the State University of New York College of Forestry at Syracuse. Established in 1912, the Ranger School offers a 44-week terminal course in practical forestry.

Research

Research has been an adjunct of education almost from the establishment of the first schools of forestry. Studies in the production and management, as well as in the utilization, of forest crops have been an integral part of the program.

Most of the accredited schools of forestry now have staff members devoting full time to research. In some institutions 25 percent of the budget goes for this purpose. Among the institutions that devote sizable budgets to forest and wood-use research are the College of Forestry of the State University of New York (Syracuse); Duke and Yale Universities; the Universities of California, Michigan, Minnesota, and Washington; Michigan and Oregon State Colleges; and the Pennsylvania State University and Purdue University.

Until comparatively recent years private timberland owners and operators of wood-using industries were not generally research minded. Increasingly, however, they have needed to find the answers to pressing problems of forest management and wood utilization. Accordingly, rather extensive programs of research, sponsored and financed by forest products industries, are being conducted at some educational institutions.

In addition to research in silviculture and forest management, numerous studies in related fields are now under way. Noteworthy are the studies in range management, wildlife management, forest ecology, forest entomology and pathology, forest influences, and wood technology. In the past, much of this kind of research was empirical, aimed at finding quick answers to immediate problems. In late years the educational institutions have emphasized basic research as the indispensable foundation for improving technical practice.

Under a grant of $30,000 from the Rockefeller Foundation, the Society of American Foresters is currently conducting a survey of forestry research in America. The results of this study, which will include the record of research by educational institutions, will be published in 1955.

Current Educational Problems

A major problem in forestry education, as it is apparently a major problem in professional education generally, is how to strengthen the weak institutions. If forestry is to continue to advance, the weaker schools, represented by the institutions which have been unable to meet the standards of accreditation, have a responsibility to improve the quality of their instruction.

One of the tragedies of education is the plight of the inadequately trained college graduate who fails to recognize his limitations. The young forester who regards himself as prepared for duties and responsibilities that he is unable to perform may start his professional career as a failure. Unfortunately, his employer is as likely to lay the blame for the young forester's inadequacies on the forestry profession as on the educational institution, where it belongs.

Through its accrediting procedures and in other ways, the Society of American Foresters has helped certain institutions having weaknesses to correct them. The problem is with those institutions that are unwilling to recognize weakness and unable to do anything about it when weakness is pointed out.

A second problem arises when an institution, such as a land-grant college or a teachers college, decides to offer a professional curriculum on a wholly inadequate basis. Often well-meaning but uninformed people bring influence to bear on State legislatures or college administrations to establish a professional curriculum with but little conception of what is involved in cost, manpower, and facilities. With respect to the need for new schools of forestry, the Council of the Society of American Foresters has adopted the following statement of policy:

"In view of the adequacy of existing schools of forestry in the United States to supply the healthy demand for professional foresters, the Council of the

Society of American Foresters recommends against the establishment of new schools or departments for professional training in forestry.

"The society welcomes the introduction of nonprofessional courses in forestry in colleges and universities as a matter of general education and as a part of the training of students in agriculture.

"Forestry graduates of institutions which do not meet the standards of professional training set by the Society of American Foresters are not accepted by the profession as members of the society on the same basis as are the graduates of approved schools, and may be handicapped in securing professional recognition as, in the case of other professions, the value of such standards becomes more widely understood by the public."

This policy was not adopted with the intention of trying arbitrarily to limit either the number of schools or the number of foresters. It was adopted because of the postwar tendency of certain colleges, including teachers colleges, to offer instruction in forestry on the professional level, with inadequate staffs, facilities, and financial support.

One other vexing problem which confronts forestry educators is the controversial matter of specialized or adjunctive courses at the undergraduate level. Nearly every school offers at least a few specialized courses. In expanding their offerings, several schools have perforce had to delete certain forestry courses. Range management and wildlife management are rapidly assuming the attributes of distinct professions. A separate curriculum in forest products, though not truly professional, is recognized. Intensification in these fields will continue. If each field is to be well grounded in the basic sciences and if the curriculums are to include training in the humanities and the social sciences, then schooling beyond the 4-year period is probably inevitable.

Dealing as it does with nature, the outdoors, and living things, forestry is a dynamic profession. Forestry education has been a subject of continuous growth and study, with the practicing forester participating in the discussions along with the teacher. The gratifying increase in employment during the past decade presages equally satisfactory strides during the years ahead. Of necessity there will be changes in the character of education. Hence the schools' final and biggest problem is to prepare themselves to meet the expanding demands of technical practice, of broadening employment, and of pressures for still further specialization.

The Accredited Schools

The accredited educational institutions in forestry and their enrollments in 1953-54 are shown below. The first figure indicates the undergraduate enrollment and the second the graduate enrollment.

Alabama
- Alabama Polytechnic Institute, Department of Forestry, 91, 8

California
- University of California, School of Forestry, 88, 19

Colorado
- Colorado Agricultural and Mechanical College, School of Forestry and Range Management, 288, 15

Connecticut
- Yale University, School of Forestry (graduate only), 0, 41

Florida
- University of Florida, School of Forestry, 88, 4

Georgia
- University of Georgia, School of Forestry, 132, 4

Idaho
- University of Idaho, College of Forestry, 166, 15

Indiana
- Purdue University, Department of Forestry, 142, 8

Iowa
- Iowa State College, Department of Forestry, 181, 9

Louisiana
- Louisiana Polytechnic Institute, 54, 0
- Louisiana State University, School of Forestry, 105, 5

Maine
- University of Maine, Department of Forestry, 220, 4

Massachusetts
- University of Massachusetts, Department of Forestry and Wildlife Management, 117, 4

Michigan
- Michigan State College, Division of Conservation, 423, 45
- University of Michigan, School of Natural Resources, 114, 57

Minnesota
- University of Minnesota, School of Forestry, 150, 12

Missouri
- University of Missouri, Department of Forestry, 106, 3

Montana
- Montana State University, School of Forestry, 179, 6

New York
- State University of New York, College of Forestry, 532, 100

North Carolina
- Duke University, School of Forestry (graduate only), 0, 31
- North Carolina State College of Agriculture and Engineering, School of Forestry, 174, 10

Oregon
- Oregon State College, School of Forestry, 267, 15

PENNSYLVANIA

Pennsylvania State University, School of Forestry, 278, 12

UTAH

Utah State Agricultural College, School of Forest, Range, and Wildlife Management, 154, 40

WASHINGTON

University of Washington, College of Forestry, 208, 17

WEST VIRGINIA

West Virginia University, Division of Forestry, 102, 0

Total enrollment:

Undergraduate	4,359
Graduate	479
Total	4,838

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11. Education in Home Economics

BY BEULAH I. COON*

EDUCATION in home economics prepares students for a variety of activities and functions. A large part of it is devoted to the education of homemakers in all the things that make for better homes and better home living. Another large share of the effort is directed to the preparation of students to earn their livelihood in professional service outside the home.

In this article the vital relationship of homemaking to the national welfare is fully recognized. It is well known that no influence is more effective and persistent in the life of an individual than his home and family life and that therefore no resource is more important to conserve than the homes of the nation. The emphasis in the article, however, is primarily on those forms of home economics education that prepare for gainful employment on a professional level. Such professions include teaching, research, dietetics, institutional management, home demonstration work, and consultation with certain businesses.

Beginnings

Home economics education on the higher education level had its start in three land-grant colleges of the Middle West in the 1870's, 35 years after the first college was opened to women. These three institutions were Iowa State College of Agriculture and Mechanic Arts, Kansas State College of Agriculture and Applied Science, and Illinois Industrial University, which later became the University of Illinois. The early purpose of this education, which persists, was to apply the principles of the arts and the sciences to the home, since, in the words of one of the first directors of a college program, "no industry is more important to human happiness and well-being than that which makes the home."

The elementary and secondary schools introduced "domestic economy" about the same time it was developed in colleges, and the profession of teaching in the secondary schools, colleges, part-time and adult programs still absorbs a large proportion of home economists. But as technology developed and activities formerly carried on in the home were taken over by industry, there were demands for home economics graduates in many other professions besides teaching. Among these are demands for institutional managers, dietitians, extension leaders, specialists and home demonstration agents, research workers, home economics journalists, merchandisers in apparel and home furnishings, and advisers in various other kinds of business giving service to or making products for the home.

Supply and Demand

For many years the demand for home economists has far exceeded the supply. Excess of demand over supply exists in almost all of the professions where positions are held primarily by women. A large number of women wish to be ready for two professions—homemaking and a money-making profession. They look upon the latter as a source of income before marriage, perhaps during part or all of their married life and, increasingly, during later years. At the current high level of employment in this country, with the resulting demand for more women workers, many women can expect to be employed throughout their lifetime, whether they marry or not. This general situation is exaggerated in the home economics professions, for few jobs in this field are open to men even in times when the nationwide demand for workers is not heavy. Accurate figures on supply and demand in the home economics professions are not available, but college placement services and other employment agencies consistently report from 5 to 10 demands for every graduate. Estimates of need in some of the professions give further indication of inadequacy of the supply.

There are about 26,000 homemaking teachers in secondary schools in the United States. From one-fourth to one-third of these positions are vacated annually. Some of these are filled by teachers changing positions, some by homemakers returning to teaching. To meet replacement needs alone probably from 4,000 to 5,000 positions should be filled annually by the year's graduates prepared for teaching. In recent years somewhat less than 4,000 of the 8,200 to 8,500 home economics graduates have been available for teaching positions, the number usually ranging from 3,200 to 3,500. In addition to replacement needs there are demands for a second or third teacher in schools where the program or the student enrollment is expanding, and for teachers in newly consolidated high schools replacing some of the 6,000 small high schools which have been without home economics teachers. These figures do not represent the additional needs for teachers in adult, junior college, and 4-year college programs.

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*Agent for studies and research in home economics education, Division of Vocational Education, Office of Education.

There are about 4,000 trained women employed in the food-service field of whom approximately 1,000 are in school-lunch work. The other 3,000 are in restaurants and cafeterias, hotels, department stores, clubs, inns, tearooms, airports, colleges, and industrial establishments. In 1950, the National Restaurant Association said that well over 200 vacancies existed in all types of establishments.[1]

In the closely related field of dietetics, a minimum of 8,000 hospital dietitians are employed. The American Dietetic Association reports 10 times as many demands as there are persons available. Probably 900 to 1,000 replacements are needed annually. A study of 3,400 members of the American Dietetic Association in 1949 indicated that one-half of the hospital dietitians had been in the profession an average of 6 years or less. Figures are not available for the number of dietitians and institutional managers trained, but probably not more than 1,000 are prepared annually for these professions, and it is estimated that from 1,200 to 1,500 should be prepared for these and such other food and nutrition positions as public health nutritionists, food consultants, and research workers in food and nutrition.[2]

These estimates are admittedly crude, but they indicate something of the demand and the limited supply. Similar needs for trained workers are found in research, college teaching, extension, business, and other professions. Since World War II there has also been an increasing demand for consulting home economists to work in other countries. The demand for professional home economists has consistently increased, as families, under the impact of rapid social change, have multiplied their demands for guidance. Salaried positions have been created in educational and social institutions, in research and technological laboratories, and in business and industry to meet the need. This demand has increased more rapidly than the supply of home economics graduates.

Professional Organizations

Some of the professional organizations of home economists have set specific standards for workers in their professions; others accept for membership all college graduates who majored in the field. The largest organization, the American Home Economics Association founded in 1908, accepts for membership anyone who has been graduated from a 4-year college with a major in home economics, and some who have done graduate work in closely related fields.

The American Dietetic Association requires members to have a bachelor's or advanced degree from an accredited college or university and specifies the number of hours required in such different types of courses as chemistry, biology, social science, education, foods, nutrition and dietetics, and institutional management. In addition, the member must have completed one of the hospital, administrative, or food clinic internships approved by the Executive Board of the Association.[3]

Several other organizations or sections of organizations are made up of home economists; for example, the Home Economics Section of the American Vocational Association and the Home Economics Department of the National Education Association are made up of teachers and supervisors. The Home Economics Division of the Association of Land-Grant Colleges and Universities consists of home economists who are college administrators, extension leaders, and research workers. Much of their work is concerned with raising the standards in the various professions. The School Food Service Association, the National Restaurant Association, and the Food and Nutrition Section of the American Public Health Association are other organizations with membership from the food and nutrition professions.

Membership in these associations constitutes only a part of the professional workers in home economics.

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[1] Marguerite W. Zapoleon, Mary N. Hilton, and Agnes W. Mitchell, *Food Service.* Washington, U. S. Government Printing Office, U. S. Department of Labor, Women's Bureau, Home Economics Occupations Series, Bulletin No. 234-2, 1952, p. 24.

[2] Marguerite W. Zapoleon, Agnes W. Mitchell, and Martha J. Ziegler. *The Outlook for Women in Dietetics.* Washington, U. S. Government Printing Office, U. S. Department of Labor, Women's Bureau, Bulletin No. 234-1, 1950, p. 2-19.

[3] Ibid., p. 69-70.

The AHEA has a membership of 21,000; the American Dietetic Association of 10,000; and the AVA of 7,500 home economists. These figures are not mutually exclusive since some individuals hold membership in two or more of these organizations. Their usefulness in estimating numbers of professionally trained home economists is also limited because many home economists belong to none of these groups.

Magazines published by these organizations report research, practices, and outcomes of committee and other activities. *The Journal of Home Economics*, published 10 times a year, has been the official organ of the American Home Economics Association since its organization in 1908. *The Journal of the American Dietetic Association* is published monthly.

Evolution of the Program

Home economics is like medicine in that it draws upon several sciences and focuses them on certain important ends to be achieved. Medicine draws on such fields as anatomy, physics, chemistry, bacteriology, physiology, and more recently upon psychology and psychiatry, and focuses them upon an understanding of how the body functions, how suffering can be alleviated and health achieved. Home economics draws upon most of these sciences, and upon sociology, economics, and art and focuses them upon the maintenance of family health, the improvement of living conditions, and the enrichment of human relations in the home and between the home and community.

Knowledge of social science was limited when the college program began, and subject matter was built primarily on the contributions of the physical and biological sciences to the solution of problems of the home. The place of art in making the home more esthetically satisfying was likewise recognized.

As economics and sociology were further developed, they were more and more seen as an important part of home economics. Because the family is the ultimate consumer, the home economist has a responsibility for understanding the interrelations between production, distribution, and consumption and for interpreting the needs of the consumer to the other two groups. Furthermore the family as a basic institution in a democratic society must be understood in relation to the other institutions of society.

As psychology has developed and made abundantly clear the powerful influence which the early years of life have on the formation of personality, the place of psychology and the family's responsibility for developing individuals who can function effectively democratic citizens has had increasing emphasis home economics programs.

At the same time research has been adding knowledge in the various phases of home economics nutrition, food composition and preparation, textil housing, household equipment, child developme family economics, and family relations. Throu such research the home economics program has be growing in depth as well as in breadth.

Kinds of Curriculums

The undergraduate curriculum combines gene with professional education. Many institutions no require certain general courses of all home economi graduates with additional requirements built on the to provide preparation for the different professio

Among the common or core requirements like to be found in institutions are: Courses in Engli or the humanities, art and design, the social science psychology, the physical and/or biological science child development, family relationships, foods a nutrition, health and hygiene, home manageme and family economics, housing, household equipme and home furnishing, textiles, and clothing. A committee of the American Home Economics Associatio reporting in 1949 said:

"The Committee on Criteria for Evaluatin College Departments of Home Economics, which i responsible for this report, believes that educatio for home and family life should be the first objective of a program of home economics in higher educatio It believes that such education strengthens rather than weakens the professional preparation o students at the undergraduate level and that i gives meaningful focus to the total program of college education for home economics students. . . Such a core in home economics should form the foundation for all the professional curricula offered in the home economics department." [4]

Additional professional courses are of three types: (1) Courses in certain phases of home economics, not taken as part of the core but needed for the profession chosen; (2) further courses in physical science, biological science, social science, or art, whichever strengthens the advanced home economics courses; and (3) courses aimed at developing the special skills and understandings which one must use in the profession.

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[4] American Home Economics Association, Committee on Criteria for Evaluating College Programs, *Home Economics in Higher Education: Criteria fo Evaluating Undergraduate Programs.* Washington, D. C., American Hom Economics Association, 1949, p. 32.

For example, a student preparing to be a dietitian takes the same basic courses for personal and family living as other students, and in addition she takes in her third and fourth years such courses as (1) food economics, dietetics, nutrition in health and disease; (2) organic and physiological chemistry, bacteriology, physiology, psychology; and (3) quantity cookery, institutional organization and administration, institutional purchasing, and methods of teaching. Following her college preparation she usually works for a year in a hospital or other food-service unit under a trained dietitian, and thus secures internship experience.

College faculties in home economics, like many others who prepare their students for professions, have the constant problem of combining knowledge with experience in such a way that students learn to exercise judgment in solving problems in the field. The need for practical experience has been met in a variety of ways. Most students, as responsible members of families, come to college with certain experiences on which the college program can build. In addition, many institutions encourage students to have, and a few require, experiences concurrently during holiday and/or summer vacation periods. Practically all colleges have a home management house in which students live for periods of 6 to 12 weeks, assuming all the responsibilities of the organization and management of a household and "the family" and sometimes the responsibilities of family-community relationships. Many colleges have cafeterias and tearooms where students can acquire institutional experience. They also have nursery schools where students can study and participate in the guidance of children, thus gaining pre-parental education as well as preparation for nursery school teaching. Arrangements are made for prospective teachers to have six or more weeks' experience in living and learning to teach in a community where the various school and community responsibilities of the local teacher are gradually assumed. For other home economists such as extension workers and restaurant managers, opportunity is provided to work six or more weeks in communities where they experience the normal conditions, pressures, and opportunities in their chosen professions.

One institution has set up a more specific plan for integrating college study and practical experience. It offers a 4-year program divided into 14 terms, 3 of which are spent in employment. Home economics students, beginning with their eighth term, spend every second 3-month period in employment. The coordinator employed by the college places students during these 3 periods in jobs where their experiences will be helpful in preparing for their chosen profession. For example, a prospective teacher may spend 3 months selling in a store where she is in contact with a wide variety of people; 3 months in a social service agency where she comes to know families living under conditions different from those she has known before; and 3 months as an assistant teacher in a school similar to one in which she will later teach.

Surveys and Studies of the Program

One of the early studies of college programs in home economics was done in 1914 by Benjamin Andrews at the request of the Bureau of Education. It consisted largely of a study of college catalogs and presented typical college curriculums in six different types of institutions throughout the country.[5] In 1925 the bureau published a report[6] on land-grant college education which included a section on home economics. From 1927 to 1930 the Office of Education made an extensive survey of the land-grant colleges and universities.[7] Education in home economics was extensively studied, and a set of 54 conclusions and recommendations was presented.

Beginning in 1935 representatives of the Home Economics Branch, Vocational Division, of the Office of Education assisted higher institutions in a series of self-studies of their programs for home economics students. These studies were designed to analyze practices in relation to beliefs about the purposes of the program, the curriculum, the student-faculty relationships, the methods of teaching and of guidance. For several years after the first analysis many institutions carried on a program aimed at bringing practices more in line with their beliefs.

A somewhat more extensive study was begun by a committee of the Association of Land-Grant Colleges and Universities with the original purpose of setting up standards for evaluation of home economics in higher institutions. When the work was later taken over by a Committee on Criteria for Evaluating College Programs in Home Economics of the American Home Economics Association, some members of the former committee continued to work on the new committee. An intensive study was made of a representative sample of 60 institutions through a carefully prepared schedule and through visits to the institutions by teams of workers. Findings of the study were evaluated by a selected group of consultants and the committee. The publication which resulted, *Home Economics in Higher Institutions*, includes criteria for judging the general and professional curriculum, home economics student admissions, guidance and growth, staff, physical facilities, and administration.[8]

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[5] Benjamin R. Andrews, *Education for the Home, Part III, Colleges and Universities.* Washington, U. S. Government Printing Office, 1915. U. S. Bureau of Education Bulletin 1914, No. 38.

[6] Walton C. John, *editor, Land-Grant College Education, 1910–1920, Part V, Home Economics.* Washington, U. S. Government Printing Office, 1925. Bureau of Education Bulletin 1925, No. 29.

[7] Arthur J. Klein, *director, Survey of Land-Grant Colleges and Universities.* Washington, D. C., U. S. Government Printing Office, 1930. 2 vols. Office of Education Bulletin 1930, No. 9.

Admission Requirements

Requirements for admission to training for the several professions within home economics are similar to those for admission to higher education in general and vary with the institution. Home economics in high school is not a requirement, though some units in it are generally accepted as part of college entrance qualification.[9]

Declaration of a professional specialization is usually made toward the end of the second or the beginning of the third college year. The student preparing for a home economics profession may have planned her entire college program with a specific home economics profession in mind, or she may have taken in the first 2 years basic courses common to many home economics specializations and delayed her choice of a particular one until she was about to begin her junior year. She may also transfer into the home economics field by adjusting her program to include basic course prerequisites and other professional courses.

Preprofessional work in home economics is offered in 485 degree-granting institutions and also in approximately 330 additional colleges—junior colleges and 4-year institutions which offer some home economics work but not a bachelor's degree with a major in home economics.

The problem of preparing students for transfer into professional programs in home economics is complicated because a number of junior colleges and small colleges have only one home economics teacher who cannot be prepared to give strong college work in each of the different phases home economics. In such situations, the junior co lege may offer only the general family living cou required of all students, which become part of 2-year general education program including scie social science, English, and home living. All of professional courses are then taken in the coll granting the bachelor's degree.

Schools and Enrollments

From the three higher institutions in the Mid West which introduced "domestic economy" "household arts and science" in the 1870's, number of institutions offering home economics increased steadily. Forty-four institutions abo the high school level were listed by the U. S. Commi sioner of Education as offering some "domes science" in 1900. Benjamin Andrews reported th in 1914, 252 out of the total of 450 colleges and u versities open to women students gave instructio home economics. In 1951–52, the 815 post hi school institutions offering home economics ag represented more than half of the 1,500 institutio admitting women.

The purposes of the institutions not granti degrees vary. Certain ones may offer home ec nomics primarily as preparation for transfer to pr fessional curriculums in other institutions, whi some see their function as preparing for homemaki and/or for wage earning in such home economi related occupations not requiring a degree assistants in institutional care of children, assista in food-service establishments, and directors of fo service in small institutions or school lunchrooms.

Each year the number of home economics majo has been approximately 40,000, fluctuating betwe 37,000 during the war period (1944–45) and 44,000 1949–50. The number of degrees granted annual during this period has ranged from 8,000 to 9,600

There are no complete data concerning the pr portion or number of those graduates who prepar for different home economics professions. So idea of the distribution can be gleaned from t findings of a study of enrollments in 48 land-gra institutions in 1950-51. At that time 16,811 s dents were reported majoring in home economics these institutions. Two of the 48 institutions ported specialization only as "teaching and othe More than 20 different specializations were report

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[8] American Home Economics Association, op cit, p. 12.

[9] *Opportunities in Home Economics.* Washington, D. C. American Home Economics Association, 1949.

[10] *Home Economics in Degree-Granting Institutions 1953-54.* U. S. Of Education Misc. 2557. Rev. 1954.

Table 24 shows the distribution in the six most important specialties.

Some of the other specializations not shown in the table included home demonstration work, home economics journalism and radio or television work, home service with utilities companies, public health nutrition, and home economics in social service.

Table 24.—Women majors in the six most frequently chosen professions in 48 land-grant institutions, 1950–51

Specialization	Number of women majors	Number institutions reporting
Teaching in schools	3,978	48
Clothing and textiles	951	31
Child development and family relations	928	25
Foods and nutrition	799	31
Dietetics	791	25
Merchandising of clothing, textiles, and furnishings.	496	12
Total	7,943	48

Twenty-two of these land-grant institutions also reported 1,350 men majors enrolled in home economics courses in 1952–53. Male enrollments were concentrated in five areas as shown in table 25.

Table 25.—Course enrollments of men majoring in home economics[1] in 22 land-grant colleges, 1952–53

Specialization	Enrollments of men majors	Number institutions reporting
Hotel, restaurant, and institutional management	743	11
Foods and nutrition	225	16
Child development and family relations	102	10
Art applied to the home	87	14
Textiles, clothing, and merchandising	85	10
All other home economics areas	24	----------

[1] Each individual was counted as many times as he was enrolled in courses.

Besides the students majoring in home economics, many college students preparing for other professions enroll in home economics courses, either to get help with family living problems or with their professions. Courses in marriage and family relationships, child development, nutrition, family economics, textiles, home furnishing, housing, household equipment, and costume design become a part of the general or professional program of majors in such fields as elementary education, business administration, and physical education.

Graduate Work

In 1914, Andrews reported that it was possible to take the degree of master of arts in 20 American colleges and universities by special graduate study in departments of household science and home economics and, in at least one university, Chicago, it was possible to become a candidate for the degree of doctor of philosophy in a department of household administration.[11] By that year, 27 master's degrees were reported granted—17 of these by the University of Chicago, Teachers College of Columbia University, and the University of Minnesota. Although only one doctor's degree in a home economics area had been granted by that time, home economists had done advanced study in such related fields as economics, physiological chemistry, education, sociology, bacteriology, biology, or physiology.

The demand for home economists with master's degrees has increased greatly since 1914, and along with the increase in graduate studies research in home economics has also increased. In 1952–53, 77 institutions granted 743 master's degrees, and 13 institutions granted 42 doctor's degrees in some area of home economics. The great bulk of these degrees have been in foods and nutrition, but some are now granted in most phases of home economics. Advanced study beyond the bachelor's and usually beyond the master's degree is now required as preparation for most college teaching, for research, and for some other home economics professions.

Current Educational Problems

The problems of preparing professional home economics personnel have been only partially solved. A few of the more persistent questions that leaders in home economics in higher institutions face are: How can curriculums be so organized that each part of the program functions effectively in giving realistic preparation for the jobs to be done? How can home economists who drop out of the professional field for full-time homemaking be retrained when they wish to return? How can the opportunities in the various home economics professions be brought to the attention of more young men and women? How can the needed research be provided in the various areas of home economics?

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[11] Andrews, op. cit., p. 98.

Curriculum adjustments to enable home economics workers to meet the problems posed by the constantly changing situation families face in mid-20th century are a pressing need in colleges training professional home economists. In some institutions the home economics program is still dominated by the early emphasis on material needs, such as foods and clothing, and by the physical and biological sciences, with but limited time for the human aspects of living of concern to homes and families and, therefore, to home economics professional workers. Child development, family relationships, home management, family economics, sociology, psychology, and economics sometimes receive too little attention.

Science and technology not only bring new products and equipment and new demands for professional workers, but also contribute to changed patterns of living and working. Adjustments must be made in curriculums in the light of these changes.

Another problem demanding attention is that of achieving a better integration between the student's general and professional education. In some institutions, the student's professional needs so dominate the curriculum that there is little opportunity for her to achieve a general education. In other institutions where certain of the science, humanities, and social science courses are primarily directed toward general education, education for family living may not be part of this general education.

The problem of organizing the curriculum so that each year functions most effectively in the life of the student as an individual and family member, and as a future professional worker, has not yet been solved. Several institutions are experimenting with the placement of parts of the curriculum and with community and work experiences to determine how to make each course result in more permanent learning. Some studies of college students have indicated that 50 percent of the facts learned in one course may be forgotten before the next course. Underlying principles may not be well-enough developed or motivation may not be great enough. A different organization or emphasis in the curriculum or a different combination of work experiences and college instruction may lead to more economical learning. Community and work experiences are being made an important part of the educational program in some colleges.

Methods of teaching which develop independence, resourcefulness, and ability to solve problems and to gain an understanding of principles should be more widespread. More opportunities need to be provided for developing a sensitivity to the situations which cause tensions that disrupt family living and ability to alleviate them.

Among the problems which are only partially solved in the preparation of professional home economists is the persistent shortage of personnel. Some of the proposed solutions to this problem which are being considered are (1) the return to the profession of homemakers whose children are grown and who have had opportunity for some further up-to-date professional preparation; (2) more part-time employment opportunities for married home economists; (3) the interesting of more men in home economics professions (several home economics staffs now have men members, and men have been enrolling in curriculums preparing for food service, merchandising, interior design, and family counseling); (4) a more specific plan for informing young people of professional opportunities in home economics.

Research of a high quality has been carried on in some of the phases of home economics. In other phases there has been a mere beginning, and there is great need for studies which will help to answer many important questions. There has been more research in foods and in nutrition than in other aspects of home economics. There continues to be, however, a great need for additional research in these two areas. Research in clothing, housing, home equipment and furnishings, family relations, child development, family economics and home management, home economics education, and institutional management should be greatly expanded. More research has been focused on the physical and chemical than on the biological, economic, social, and psychological problems of home and family life.

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12. Education in Hospital Administration

By DEAN CONLEY*

HOSPITAL ADMINISTRATION is one of the fields of service that have recently developed a regimen of professional training. In spite of its recent organization, however, this new instruction is now well established in a small number of universities.

Development of Hospital Administration

The transformation of hospitals from simple nursing homes to complex medical centers is a recent development. The first hospital in the United States—The Pennsylvania Hospital in Philadelphia—was established in 1752. By 1873 only 178 institutions were providing bed care for the sick. Today there are over 6,000 hospitals representing a capital investment of $5 billion and an annual operating budget of $2 billion.

The advance of medical science has been largely responsible for this unprecedented development of hospitals with its emphasis on hospital administration and the consequent rise in professional status of the hospital administrator. Medical progress has brought about a high degree of specialization by physicians, increased the need for technical assistance, and required expensive and elaborate equipment, all of which depend on an effective hospital organization to assure efficient use. The coordination of hospital activities and services related to medical practice, research, education, public health, business and the community is the function of the administrator. It is essential, therefore, that the hospital administrator be competent and well-trained as an executive.

The establishment of medical colleges and nursing schools preceded any consideration of education for hospital administration. Physicians and nurses became administrators, although some men and women without medical or nursing education also were appointed by hospital governing bodies.

There are approximately 10,000 top management positions of administrator and assistant administrator in all hospitals in the United States. Conservative estimates of the most recent study in annual turnover in administrative positions indicated a total of 200 new places yearly for appointment of course graduates.

Hospital Associations

An Association of Hospital Superintendents was organized in 1898 and later became the American Hospital Association. Until World War I, this was little more than an informal body which held an annual conference. However, it did furnish the basis for identifying the hospital administrators as a distinct professional group.

The American Hospital Association is the oldest and largest organization of its kind in the world. From an original roster of 9, it has grown to include more than 4,000 institutional members. The purposes of the association as set forth in the bylaws are to promote the public welfare through the development of better hospital care for all the people; to develop factual knowledge in regard to the various specialized services and functions of hospitals; to coordinate plans, problems, actions, and needs of all hospitals for the benefit of individual members; and to aid in the health education of the public.

Hospitals, the official journal of the association, is one of several periodicals on hospital administration. The library of the association provides the most complete reference service in the hospital field. The facilities of the library, reserved to the membership, include an especially valuable lending service, which sends books, reprints, periodicals, etc., on request.

Supplementing the work of the American Hospital Association are the State and regional associations. Special associations exist also for religious denominations which sponsor many of the non-governmental institutions in the United States and Canada.

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*Executive Director, American College of Hospital Administrators.

Professional Society

The American College of Hospital Administrators (ACHA) was founded in 1933 with the express purpose of promoting educational opportunities in hospital administration and of providing recognition for the hospital administrator. This was the first professional society with membership reserved exclusively for persons engaged in hospital administration.

Candidates qualify for admission to this society on the basis of experience, training, and the successful completion of written and oral examinations. The membership affiliations of nominee, member, and fellow provide incentives for individual progress, indicate levels of experience, serve as measures of competency, and contribute to advancement in hospital administration. Nearly 3,000 administrators are affiliated with the society. Geographically, they represent hospitals in every State and in all the Provinces of Canada. The immediate direction of the affairs of the ACHA is in its board of regents, consisting of 15 representatives, 1 elected from each of the regions for a 3-year term, and the officers who are elected at large for 1 year terms.

Since 1933 the ACHA has been a motivating force in developing educational opportunities for hospital administration. It has been identified in nearly all activities and developments either as a sponsoring body or cooperating agency, or through representation by persons within its membership. The first of several studies made by the ACHA was an analysis of the duties and responsibilities of the hospital administrator (1935). This was actually an extension of a job study made in 1926, but then it came more directly to the attention of the hospital field. Since 1935 it has served as the basis for a developing concept of the hospital administrator.

From 1933 through 1944, the Educational Policies Committee of the ACHA was chiefly responsible for crystallizing the thinking and planning for administrative careers. In *University Training for Hospital Administration Career* (1937) the committee pronounced as a principle that at least a master's degree or its equivalent should be required for qualification within the profession and that in view of present developments in the health field, a master's degree is practically indispensable in measuring the educational status of hospital administrators.

Through the initiative of this society a code of ethics for hospital administrators was developed in 1939 as a joint statement of the American Hospital Association and the American College of Hospital Administrators. The code was subsequently adopted by other hospital associations and several hundred hospital governing boards. It reflects the philosophy of the hospital administrator and serves as a guide of conduct for him in his professional activities.

Early Studies

Training of the hospital executive was a recurring topic of discussion at the annual conferences of the American Hospital Association, but not until the 1920's was anything accomplished in the nature of substantial surveys. The first of these studies was prompted by the general opinion of that time which acknowledged that the methods for meeting the demand for qualified hospital executives were quite inadequate. The Rockefeller Foundation sponsored a conference in 1920 to consider the problem and to suggest a feasible method of dealing with it. The conference established a committee on the training of hospital executives and proposed a research study of "contemporary hospital practice, organization, and tendencies." The investigation was carried on by a qualified staff and a report was published in April 1922, entitled *Principles of Hospital Administration and the Training of Hospital Executives.*[1]

The interest of hospital administrators was greatly stimulated by this study. A significant recommendation, aside from presenting a composite picture of the American hospital, its functions, and organization, called for "training under university supervision and the immediate direction of an individual of adequate university calibre with a departmental staff and organization appropriate to this problem of training and research."

A job analysis of the hospital administrator was prepared in 1926 by a candidate for the degree of doctor of philosophy at Marquette University. It was a detailed study of the duties and responsibilities of the hospital superintendent, tracing his relationships to the board of trustees, medical staff, nursing and patient care, training of interns and nurses, the out-patient department, personnel, physical plant, vendors, and the public.

The second Rockefeller Foundation study was reported in 1928.[2] It dealt with the need for trained hospital executives and how they may be trained. A suggested undergraduate curriculum was outlined, and a research center in hospital and clinic administration was described as a fundamental need.

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[1] *American Hospital Association Transactions*, 26th Annual Conference, Buffalo, N. Y., p. 294–5.

[2] Michael M. Davis, *Hospital Administration: A Career*. New York, 1928.

Early Training Programs

Among the universities to undertake the training of hospital administrators was Marquette, which in 1926 set up a College of Hospital Administration. It offered an undergraduate and a graduate curriculum. Seven undergraduates enrolled for the year 1926–27, and two students received degrees in 1927. Short courses consisting of lectures and hospital visits were also offered. Twenty persons enrolled for a 2-week program, and during the summer session of 1927 a similar program of 6 weeks was held. Registration was without prerequisites. Registrants were principally hospital people of varying experience and responsibility. The Marquette courses were discontinued in 1928. At the time hospital leaders were of the opinion the discontinuance was due to lack of demand.

A program in hospital administration at the graduate level was established at the University of Chicago in 1934 with Michael Davis in charge. Now in the 22d year, the course has an enrollment of 11 students. The graduates are active administrators of hospitals in every region of the country. In a few notable exceptions graduates went into the administration of health agencies or organizations allied to hospitals.

Postwar Planning

Until 1943 the University of Chicago offered the only program in hospital administration. In the fall (1943) Northwestern University (Chicago) offered a graduate course with classes scheduled in the evening. Both courses have been continuous, and each year graduates have attained the master's degree. Several developments during the ensuing year seemed to indicate that it was time for action. Other strong universities were beginning to show interest in developing programs for the training of hospital administrators and were seeking information on curriculum. There were indications that World War II would soon end and that many men and women would return to civilian life with a background of experience in hospital administration and thus supply a large number of students for the proposed programs. This was borne out by a survey which reached about 10,000 persons in military service. Fourteen hundred indicated an interest in formal training for hospital administration.

The American College of Hospital Administrators decided to undertake a 3-year educational research project on the college curriculum in hospital administration. The American Hospital Association was asked to be cosponsor, and the Kellogg Foundation not only agreed to finance the project but arranged to offer grants-in-aid to universities that were willing to establish training courses.

Joint Commission on Education

The Joint Commission on Education of the American College of Hospital Administrators and the American Hospital Association was established in February 1945. Charles E. Prall and Paul B. Gillen were appointed director and assistant director, respectively, of activities related to (1) establishing university courses for the preentry training of hospital administrators; (2) supplying consultant service curriculum materials, and other forms of assistance to the training centers; (3) developing standards for the year of administrative internship, and to otherwise assist in making this a valuable feature of the training program; (4) supplying consultant service and other forms of assistance for institutes, workshops, and like efforts intended to promote the education of hospital administrators in service.

The work of the commission was completed in June 1948. By that time new university programs were established and students accepted at six universities: Columbia, Johns Hopkins, Minnesota, Toronto, Washington (St. Louis), and Yale. New courses were also contemplated and later set up at the University of California and the University of Pittsburgh. The commission had contributed to these courses through such services as curriculum workshops for faculty, assistance in starting the programs, and direct consultation. Program directors for the Chicago and the Northwestern courses, where the programs had been established earlier, participated in all the activities sponsored by the commission. Tangible accomplishments included 5 publications, 3 of which are listed in the Selected References in this article.

Courses in Hospital Administration

Fourteen universities offer courses in hospital administration at the graduate level. They require a degree for admission and include a year of academic study followed by a 12-month administrative residency in a selected hospital. During the residency, the student becomes oriented in hospital management and observes the application of administrative theory under the guidance of an experienced hospital administrator.

The curriculum has not been standardized, although it is evident that each university program has adhered to the recommendations on curriculum which were made by the Joint Commission in 1948. Illustrative of the required subjects and the semester hours of credit at one university which correspond to offerings in the other programs are the following: The Hospital in the Community, 8; Hospital Organization and Management, 4; Introduction to Public Health Administration, 3; Accounting and Budgetary Control, 8; Personnel Management, 4; and Seminar on Functional and Departmental Problems, 4.

The numbers of graduates in hospital administration in recent years were:

Year	*Total graduates*
1948	76
1949	104
1950	126
1951	139
1952	165
1953	200
1954	226

Following the year of academic study, a 12-month administrative residency is required of the student to qualify for the master's degree. The residency is served under a hospital administrator who guides the student through a year of practical experience. The student is assigned definite duties that enable him to become acquainted with the hospital and its principal departments. As he demonstrates ability in handling details he may be given more substantial responsibilities.

A new manual on *The Administrative Residency in the Hospital* has just been prepared. It is intended for both the preceptor and the student. Preceptors who are currently responsible for residency programs also receive guidance from the course directors. Recently a series of preceptors' conferences were held as an aid to the hospital administrator and to assure the effectiveness of the program offered at his hospital.

Refresher Programs

For some years refresher courses have been available in hospital administration. The Educational Policies Committee of the ACHA in 1943 prepared *Basic Principles on Institute Programs*[3] as a guide in planning short courses or institutes. The experience from 30 institutes was digested and appraised in the determination of these policies. A direct consequence of this report was the acceleration of "refresher programs" for hospital administrators. Known as institutes, conferences, or seminars, these programs have been sponsored and arranged by the American College of Hospital Administrators, usually in connection with university facilities. Today the annual schedule of institutes extends into many regions of the country, and the programs are varied to meet the needs and interest of those who enroll.

Each year nearly a thousand hospital administrators attend one or other of the institute programs. Registration is limited to administrators and assistant administrators of acceptable hospitals. Maximum enrollment is 100 persons. Some programs are of 2 weeks' duration. Others are planned as 1-week institutes. Recently the college has found ready and enthusiastic interest in 2-day intensive exploratory conferences on a single subject. Hospital administrators now have several opportunities each year to attend refresher courses.

Association of Programs

The directors of the several university programs in 1947 established the Association of University Programs in Hospital Administration. The objects of the association include: (1) Development of standards for the conduct of graduate programs; (2) the development of resources and materials used in teaching; (3) research in hospital administration; (4) improvement in the process of student selection; (5) improvement of the administrative residency; and (6) the accreditation of graduate programs through membership in this association. An annual meeting is held to provide a means of group discussion of common problems and methods.

Graduate programs which comply with the following requirements are eligible for membership in AUPHA: (1) The university must be a member of the Association of American Universities; (2) the program must meet the requirements of the university for the award of the master's degree; (3) it must require a full academic year of study beyond the bachelor's level followed by a 12-month residency; (4) it must be designed primarily to fit the student for a career in hospital administration; (5) a director of the program and at least one other faculty member must have had experience in hospital administration; and (6) authority for admission of students and recommendations for the degree should reside with the course director. The enforcement of these standards has the effect of accreditation.

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[3] *ACHA News*, November, 1943.

Conclusion

Steps have been taken to assure satisfactory educational opportunities for those who would prepare themselves for hospital administration. Most favorable relations prevail among the courses and with the professional administrator in hospitals where students must serve their residencies.

Graduates of the programs have been readily accepted for positions and are performing creditably. At present opportunities in the field of hospital administration are good but limited in number. The future of the profession appears hopeful. The challenge of keeping the hospitals in line with medical progress and of keeping the public informed of the hospital's functions and services is proving attractive to many future executives. Moreover, an opportunity to assist in such essential activities as those pertaining to hospital care of the sick gives the prospective administrator not only personal satisfaction but a feeling that he is serving his fellow man.

Institutions Offering Courses

The following list shows the school or division of the college or university where the course in hospital administration is offered. The figures indicate the enrollments in hospital administration in the fall of 1953.

CALIFORNIA
University of California, School of Public Health, 10

CANADA, ONTARIO
University of Toronto, School of Hygiene, 12

CONNECTICUT
Yale University, School of Medicine, Department of Public Health, 9

ILLINOIS
Northwestern University, School of Commerce, 41 (45 part time, in addition)
The University of Chicago, School of Business, 11

IOWA
State University of Iowa, Graduate College, 8

MARYLAND
Johns Hopkins University, School of Hygiene and Public Health, 8

MINNESOTA
University of Minnesota, School of Public Health, 22

MISSOURI
St. Louis University, Graduate School, 20
Washington University, School of Medicine, Department of Hospital Administration, 10

NEW YORK
Columbia University, School of Public Health, 31

PENNSYLVANIA
University of Pittsburgh, Graduate School of Public Health, 8

TEXAS
Baylor University—Brooke Army Medical Center, Medical Field Service School, 13

VIRGINIA
Medical College of Virginia, School of Hospital Administration, 16 (including 8 interns)

Total enrollment, 219

A course in hospital administration is given at Duke University Hospital, Durham, N. C. The bachelor's degree is required for enrollment, and a certificate is awarded on completion of the course. A feature of this program is the practical on-the-job approach, which is continued with seminars and lectures for an 18- to 24-month period. The enrollment in 1953–54 was eight.

Selected References

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——— and American Hospital Association, Joint Commission on Education. *The College Curriculum in Hospital Administration: A Final Report of the Commission.* Chicago, Ill., Physicians' Record Company, 1948, 107.

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13. Education for Journalism

By NORVAL NEIL LUXON*

NEWSPAPERS, magazines, advertising agencies, and radio and television stations in the United States have widely varying standards of competence for employees in their nontechnical and nonmechanical departments. None of these communication agencies accepts the principle of licensing its practitioners, a standard procedure in such fields as medicine, dentistry, and law. In fact, any attempt to license writers, editors, or other processors of news or information would be a violation of the first amendment to the Constitution of the United States.

Education of Journalists

In practice today there are no universally accepted criteria for admission into the news or editorial departments of newspapers, magazines, and radio stations, or for employment in advertising agencies or television studios. But as the proportion of persons attending colleges and universities has increased in the past half century, the number of college graduates entering the expanding communications field has increased proportionately if, indeed, not more rapidly. Many newspapers, not a few advertising agencies, and some radio stations require applicants for positions to possess a college degree.

There are editors who believe that the best preparation for a career in journalism is a broad cultural background obtained in a liberal-arts college with a major in economics, history, political science, or English. Others, recognizing that the curriculums of professional schools of journalism consist of cultural courses—from 70 to 80 percent—plus a thorough grounding in journalism history, ethics, and techniques in their programs, recruit their staffs largely from graduates of schools of journalism. Still others—and this group may be in the majority—build their staffs from three sources: (1) Graduates of liberal-arts colleges, (2) graduates of professional schools of journalism, and (3) persons with substantial experience on smaller city newspapers without regard to formal educational background.

This chapter is concerned only with professional education for journalism in the United States. It will not attempt to relate or evaluate the experiences of editors with individuals in each of the three categories listed above, interesting as some of these undoubtedly are.

Historical Background

When Walter Williams, practical Missouri newspaperman, founded the School of Journalism at the University of Missouri in 1908, he established the first professional school of journalism in the United States. A number of institutions had offered journalism courses prior to that date, but none had organized these courses as a "major" or a professional sequence.

As far as can be determined, the first plan to train journalists in an institution of higher learning was proposed by Gen. Robert E. Lee in 1869, when he was president of Washington College, now Washington and Lee University. General Lee endorsed a faculty plan and presented it to the Washington board of trustees for training printer-editors at the college. Under this proposal, the students were to carry the usual liberal-arts courses and in addition were to spend 1 hour a day at the typecase. An arrangement was made with John J. Lafferty, publisher of the weekly Lexington *Virginia Gazette*, for the practical aspect of the work, and during the academic year 1869-70 the publisher held the title "instructor of stenography."

Fifty press scholarships were established, but probably because of the economic situation in the South few students took advantage of this then unique opportunity. The identity of no student who may have studied under this plan has been documentarily established. The scholarships were listed in the Washington College catalogs from 1869 through 1878 when, for one reason or another, they were dropped.

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State universities and colleges, never institutions to shut their doors to innovations, were the proving ground for early courses in journalism and for the subsequent development of professional programs in that area. Kansas State Agricultural College started a journalism course in 1873; Cornell University in 1876; the State University of Iowa and the Ohio State University in 1892; Indiana University in 1893; as did 12 other colleges and universities between 1900 and 1915. These courses, in most instances, were interrupted from time to time, but since the second decade of the 20th century, professional education for journalism has made fairly steady progress in American institutions of higher learning.

In 1940, a survey revealed that 542 colleges and universities offered journalism courses and that 103 had established programs leading to a degree in journalism. The number of institutions teaching journalism declined materially during World War II, but again increased substantially during the period of the "veterans' bulge" in the forties.

Professional Organizations

There are three professional organizations in the field of education for journalism; the Association for Education in Journalism (AEJ), the American Association of Schools and Departments of Journalism (AASDJ), and the American Society of Journalism School Administrators (ASJSA).

The Association for Education in Journalism has 575 members who are journalism teachers in 4-year institutions of higher learning. It came into existence in 1951 as the successor to the American Association of Teachers of Journalism, founded in 1912.

In 1917, representatives of 10 of the colleges and universities offering professional programs in journalism, meeting at the convention of the American Association of Teachers of Journalism, founded the American Association of Schools and Departments of Journalism. The institutions holding membership in this association (34 in 1943) came to be recognized as class A schools, although the only accrediting function exercised by the group was in electing to membership those institutions which were recommended to the entire membership by its Council on Education for Journalism. In 1949 the AASDJ changed its name, but not its initials, to the Association of Accredited Schools and Departments of Journalism, but in 1954 reverted to its long-standing name of American Association of Schools and Departments of Journalism. Currently, it has 39 institutional members.

The American Society of Journalism School Administrators, founded in 1945, has a membership of 35 heads of schools and departments of journalism for the most part in smaller institutions than those holding membership in AASDJ. Heads of three AASDJ member schools are also ASJSA members. It should be noted that among the 87 schools and departments of journalism in the list of schools later in this chapter, 24 schools are affiliated with neither of these two associations.

Accreditation

The 1954 International Yearbook Number of *Editor & Publisher* lists 103 schools and departments of journalism in the United States. These 103 colleges and universities presumably offer a sufficient number of courses in journalism to comprise a major leading to a degree in that subject. Of this number, 39 schools and departments have been accredited by the American Council on Education for Journalism (ACEJ), a 12-man body representing journalism educators, regional and national newspaper organizations, and the radio and television industry.

The council is an outgrowth of a cooperative committee between journalism educators and newspapermen established in 1930 as the Joint Committee of Schools of Journalism and Newspaper Groups. Eight years later, after a period of inactivity during the depression years, this committee was reconstituted as the National Council on Professional Education for Journalism. In 1945 its name was changed to the American Council on Education for Journalism.

Newspaper organizations financially supporting and holding membership in the ACEJ are the American Newspaper Publishers Association, the American Society of Newspaper Editors, the National Editorial Association, the Inland Daily Press Association, and the Southern Newspaper Publishers Association. The National Association of Radio and Television Broadcasters and the American Association of Schools and Departments of Journalism also financially support ACEJ.

In January 1945 the American Association of Schools and Departments of Journalism voted to approve an accreditation program which placed the responsibility for accreditation in the hands of the American Council on Education for Journalism with the provision that the actual accrediting be done by a

7-man accrediting committee at least 4 members of which must be educators. From 1946 through October 4, 1953, the accrediting committee consisted of 4 educators elected to 3-year terms by the Association of Accredited Schools and Departments of Journalism, 2 representatives appointed by the president of the American Society of Newspaper Editors, and 1 appointed by the president of the American Newspaper Publishers Association.

Between 1947 and 1951, 60 institutions applied for accreditation, 50 were visited, and 40 were accredited. Later, one of the accredited institutions abolished its journalism program, leaving 39 accredited schools.

Neither the ACEJ nor its accrediting committee at any time attempted to impose a set of predetermined standards on the schools under consideration. The educational or professional objective of each school applying for accreditation was accepted by the committee and the school evaluated on that basis.

Because of the rapid expansion in the communications field in recent years and the variety of courses and curriculums established to prepare students for different areas in the field, the ACEJ accredited curriculums or sequences. Of the 39 accredited schools, 36 are accredited for the news-editorial sequence; 13 are accredited for only this one curriculum. Other sequences and the number of institutions approved for each are: Advertising, 15; advertising-management, 4; agricultural journalism, 6; home economics journalism, 4; management, 5; community journalism, 10; magazine, 6; pictorial journalism, 4; radio journalism, 12; and one school each in science journalism, communications and public opinion, informative writing, and business advertising journalism.

In August 1953, the Association for Education in Journalism and its two coordinate organizations, the AASDJ and ASJSA, voted to change the method of educational representation on the American Council on Education for Journalism and its accrediting committee. From 1945, educator members of the two groups had been elected to the council by the American Association of Schools and Departments of Journalism, and after the organization changed its name, by the Association of Accredited Schools and Departments of Journalism. Effective at the 1953 joint conventions of the three associations, it was provided constitutionally that the AASDJ elect 2 members, the ASJSA 2 members, and the AEJ 2 members to the ACEJ. It also was agreed that the council itself elect educator members to the accrediting committee. The educator members of the current accrediting committee, elected October 4, 1953, consist of 3 members from AASDJ schools, and 1 ASJSA member.

Schools and Enrollments

Currently there appear to be about 100 schools and departments of journalism in the United States which offer a professional education in this field.

Accurate data on enrollment in professional schools of journalism unfortunately are not available. No satisfactory uniform system of reporting registrations has been established. Schools reporting enrollment to the *Editor & Publisher Yearbook* often include preprofessional students (freshmen and sophomores). A study of data supplied to the *Journalism Quarterly* and *Editor & Publisher* for any given year by schools or departments invariably reveals discrepancies in totals.

For some years the *Journalism Quarterly* has asked schools and departments of journalism to report enrollment data each autumn, breaking it down into preprofessional, upperclass, and graduate enrollment. As can be seen by reference to table 26, the number of schools so reporting has ranged from 52 in 1947 to 87 in 1953. In certain years, some schools have failed to report, and others have not separated their students into the requested categories. In 63 schools reporting enrollments in both 1948 and 1953, total upper division and graduate enrollment dropped from 8,949 in 1948 to 4,230 in 1953. Journalism enrollment in these schools thus dropped much more sharply in the postwar period than university enrollment generally, but comparable data are not available for the other 40 schools having journalism programs.

Professional enrollments as reported to the *Journalism Quarterly* in its fall 1953 issue are shown in the list of schools later in this chapter.

It is possible that, with one overall organization—the Association for Education in Journalism—now functioning, means will be devised for the compilation of nearly complete and more nearly accurate data on professional enrollment in schools and departments of journalism.

Typical Undergraduate Program

Admission to the typical school or department of journalism is granted upon completion of the requirements of the lower division of a college of arts and sciences. The typical undergraduate program in journalism is confined to the junior and senior years

Table 26.—Upperclass and graduate enrollments in schools of journalism, 1947–53

Fall semester year	Number of institutions reporting	Upperclass enrollment	Graduate enrollment	Total professional enrollment
1947	52	6, 741	549	7, 290
1948	72	8, 966	685	9, 651
1949	68	7, 751	690	8, 441
1950	73	5, 923	778	6, 701
1951	71	4, 632	690	5, 322
1952	83	4, 816	604	5, 420
1953	87	4, 508	601	5, 109

Some schools of journalism require prospective students to enroll in an introductory or survey course in the sophomore year; others permit it; and some do not schedule journalism courses below the third year or upper division level.

When he attains upper division status, the student is admitted to the school of journalism as a major. In most institutions, approximately 50 percent, and seldom more than 60 percent, of his courses in these two final years are in the field of journalism. Although the pattern varies somewhat among institutions, a typical journalism student takes elementary and advanced reporting courses; 1 or 2 courses in copyreading and editing; 1 on feature-article writing; a course in the history of journalism; 1 in the law of communications; 1 on the history of typography; a course on the relationship of the communications field to contemporary affairs; one in comparative (or foreign) journalism, and in some schools one or more courses on the business side of journalism, covering circulation, advertising, and promotion.

These courses, then, form the core of the typical journalism curriculum for a student planning to enter the news or editorial department of a newspaper. There are additional courses, elective in most schools and required in others, on other facets of newspaper work and in the broad field of communications, including radio, public relations, magazines, advertising, and house organs. From 25 to 30 percent of the total of the undergraduate's courses in a typical school of journalism are in journalism.

Graduate Education

As stated above, admission to most schools of journalism comes at the level of the junior year in college. Two exceptions are the Pulitzer Graduate School of Journalism at Columbia University, which admits 60 to 70 graduate students each fall, and the University of California at Los Angeles, which admits 20 college graduates to its graduate journalism department. Columbia and UCLA grant the master of arts degree at the end of 1 year's work.

Among the 87 schools and departments reporting 1953 enrollments to the *Journalism Quarterly*, 35 list graduate students. Of the 39 accredited schools and departments, 27 have programs leading at least to the master's degree. The University of Missouri has granted the doctor of philosophy in journalism for many years. The University of Minnesota recently established a Ph. D. program in journalism which is of an interdisciplinary nature. The Universities of Illinois and Wisconsin, the State University of Iowa, and Stanford University grant the doctor of philosophy in communications, an interdisciplinary field in which the journalism, economics, history, political science, psychology, sociology, and statistics, and in some instances other departments of instruction cooperate in varying degree, depending upon the interests of the individual candidate.

On the master's level, most of the schools of journalism work closely with the above-mentioned departments and also on occasion with the departments of English, speech, and radio if instruction in radio is not directly connected with the school of journalism.

Graduate work in journalism is relatively new on the American university scene but, as pointed out in the section on communications research, it is developing rapidly and is making significant contributions in a field which impinges on the everyday life of virtually every citizen of the United States. Its expansion is an indication that the value of investigation, analysis, and evaluation of the press in particular and the communications field in general has been recognized not only by teachers of journalism, but by university administrators, newspaper editors and publishers, broadcasting officials, advertising executives, marketing specialists, governmental agency heads, motion-picture and television producers, and politicians. Its continued development in cooperation with cognate disciplines is inevitable in an era when all media of communication, old and new, are being studied with a view toward increased usefulness in times of peace or war.

Cooperation With Communications Agencies

Because most of the graduates of the schools and departments of journalism are preparing for entrance

Table 27.—Earned degrees conferred in journalism, 1947–48 through 1952–53

Year	Bachelor's and first professional degrees	Master's and second professional degrees	Doctor's degrees
1947–48:			
Men	2,016	197	0
Women	1,334	50	0
1948–49:			
Men	3,335	225	3
Women	1,221	44	0
1949–50:			
Men	3,848	271	3
Women	1,089	44	0
1950–51:			
Men	2,684	310	3
Women	1,019	51	0
1951–52:			
Men	1,959	268	4
Women	813	54	0
1952–53:			
Men	1,680	223	3
Women	855	55	0

Source: Compiled from annual reports of earned degrees made by Office of Education.

into newspaper, radio, advertising, magazine, or public relations fields, schools maintain a working relationship with communications agencies.

The relationship with national and regional newspaper associations is mentioned in the section on accrediting. In addition, most of the schools have working agreements with the press in the area in which they are situated. Internships for students on newspapers are arranged in some instances. Newspapermen are brought to campuses frequently as lecturers.

The American Association of Schools and Departments of Journalism has representatives on the Council on Radio and Television Journalism, on which radio networks and individual stations hold membership. This council affords the radio industry an opportunity to present its needs to the schools which are training its future employees. It also enables educators and industry representatives to thresh out problems of interest to both.

For some years a summer internship program under which faculty members are placed on newspaper staffs and in radio stations has been worked out jointly by the American Council on Education for Journalism, the Council on Radio and Television Journalism, and the Newspaper Advertising Executives Association in cooperation with news and advertising departments of individual newspapers and radio stations.

Several schools have arrangements with the weekly press in their States under which teams of students go to a community, spend a week gathering news, selling advertising, and publishing an issue of the community weekly newspaper. Other schools have agreements with daily newspapers for a student staff to take over the editing of the newspaper 1 day a year. Still others have arrangements with newspapers under which at least a number of their students have the opportunity to gain practical laboratory experience by accompanying regular members of the staff on their daily rounds and in some instances by writing actual news stories.

Since television has entered the communications field, some stations are cooperating with schools of journalism on research relating to the best methods of presenting news events to the new visual-audio public.

Cooperation on research of interest to the communications industry is discussed in detail in the section on research, and it is in this area where schools with graduate programs have their closest working relationship with communications agencies.

Communications Research

Research in journalism and the broader field of communications is concerned with channels through which information reaches the public, the meaningful content of the media, the controls affecting the channels, the "audience": its makeup and media habits, and the effect that that information has had or may have on the public.

By its very nature, journalism and communications research reaches into many related disciplines, especially cultural anthropology, economics, history, political science, psychology, and sociology.

Research problems in journalism and communications frequently must take into account the economic aspects of the various media of mass communication. History of the press, of individual newspapers and magazines, and of the initiation and expansion of more recently developed media of communication offers a fertile field for research. The niche occupied by the press, radio, and television in relation to political campaigns and to the entire political fabric of the Nation has been and undoubtedly will continue to be subjected to searching examination.

The psychological and sociological implications of the effects produced by information reaching the public through the channels of the different media of mass communications are of current and constant interest to the scholar and the investigator in the field of journalism as well as to the psychologist and the sociologist. In fact, much of the research in schools of journalism in the broader field of communications has, of necessity, become interdisciplinary in nature with journalism professors—many of whom earned their advanced degrees in history, political science, psychology, and sociology—cooperating on research projects with colleagues from these cognate disciplines to the advantage of the individual, the school and department, the communications industry, and ultimately the public.

Research covers such subjects as biographies of newspapermen, histories of newspapers or of the press of a State or a region, case studies of the handling of a sociological or political problem by a newspaper or a segment of the press, public opinion and propaganda analyses, international news communications, the foreign press, reading habits or readership, radio listening habits, readability of articles and of typefaces, and legal problems encountered by the various media of communication.

In *Introduction to Journalism Research* (See Selected References), the editors asked six authorities on communications research to present some of the fields and methods of research being explored and used. The scope of communications research is indicated in the chapter headings: "History and Journalism Research," "Research in Legal Problems of Communications," "Journalism Research and Statistics," "The Questionnaire Interview," "Content Analysis in Mass Communication," and "The Experimental Method and Communications."

Within the past decade several leading professional schools of journalism, with the approval and encouragement of their university administrations, have turned their attention to research and, while continuing to train undergraduates to enter the newspaper, magazine, radio, and television industries, have established research programs. Staff members, cooperating with investigators from coordinate academic areas, engage in organized research of interest to newspaper editors and publishers, the broadcasting industry, the motion-picture industry, advertisers, political parties, Government agencies such as the Department of State, and the United States Information Agency, and, in short, to any individual, organization, or group concerned with the content of communications media and the public's response to that content.

The Research Division of the School of Journalism, University of Minnesota; the Institute of Communications Research, University of Illinois; the Institute for Journalistic Studies, Stanford University; the School of Journalism, University of Wisconsin; and the School of Journalism, State University of Iowa, sponsor organized research in communications that is proving its worth not only to the media operators but also to students of the entire communications process.

An example of cooperation on a research project is the recently completed content analysis of the flow of foreign news into 105 daily newspapers in the United States for the International Press Institute. Ten professional schools of journalism cooperated in the project, and the overall statistical work was done by the Research Division, School of Journalism, University of Minnesota.

The Bureau of Applied Social Research, Columbia University, and the Institute for Research in Social Science, University of North Carolina, are examples of research centers cooperating but not directly connected with schools of journalism.

Principal Problems

The principal problem immediately facing professional education for journalism is the determination of a set of standards by which institutions teaching journalism may be evaluated and accredited. Because of opposition in certain quarters to the criteria utilized by the American Council on Education for Journalism in its accrediting program from 1946 through 1951, that program was suspended in 1951 and a revised council membership was approved, as described, late in 1953. The reconstituted council and its accrediting committee face the problem of devising a set of standards which will satisfy the older and in most cases larger professional schools of journalism and those which protested, successfully, to the National Commission on Accrediting, that the ACEJ did not, until it revised its membership, represent the entire field of education for journalism.

Another problem facing professional education for journalism is the fact that a high percentage of its male graduates go directly from the campus to the Armed Forces for a period of 2 or 3 years or longer. The schools lose an opportunity to appraise the quality of the performance of their graduates, and the graduates, with a 2- or 3-year period of activity far removed from the field for which they studied, face difficult problems of adjustment upon their return to civilian life and their delayed entrance into that field.

A perennial problem in journalism education is the fact that related fields—public relations in particular—offer higher immediate financial rewards than do newspapers, especially those in medium-sized and small cities where most journalism graduates traditionally start their careers. This strictly economic problem is the newspaper's, not the school's, but schools on occasion have been criticized by newspaper editors and publishers because many graduates annually enter other fields.

Another problem, less urgent than it once was, is the demand by some small community editors and publishers that students be given more vocational training, more courses in techniques and fewer liberal arts, cultural courses. This criticism, fortunately, is now heard less frequently than in former years because many editors have come to the realization that a broad background in the social sciences is excellent training for the man who plans to make a career of editing or publishing a newspaper in a small town.

Conclusion

Professional education for journalism has come of age. It has passed the test of time and no longer is concerned chiefly with techniques and tools of an art or craft. It has joined the social and behavioral sciences in a broad study of communications in modern society, and in so doing it simultaneously is providing better training for tomorrow's editors and publishers.

Schools of Journalism and Enrollments

The following list of colleges and universities offering programs of education in journalism is from the *Journalism Quarterly*, fall, 1953. The figures indicate upper class (3rd and 4th year) and graduate enrollments in the fall of 1953. The asterisk (*) indicates membership in the American Association of Schools and Departments of Journalism.

Alabama
University of Alabama,* 37

Arkansas
University of Arkansas, 29

California
Fresno State College, 37
San Jose State College, 65
Stanford University,* 68
University of Southern California,* 44
University of California,* 89
University of California at Los Angeles, 19

Colorado
University of Colorado,* 66
University of Denver, 21

District of Columbia
George Washington University, 57

Florida
Florida State University, 28
University of Florida,* 66
University of Miami, 104

Georgia
University of Georgia,* 82

Idaho
Idaho State College, 10
University of Idaho, 12

Illinois
Northwestern University,* 214
Southern Illinois University, 11
University of Illinois,* 243

Indiana
Butler University, 10
Indiana University,* 79
University of Notre Dame, 51

Iowa
Drake University, 33
Iowa State College,* 73
State University of Iowa,* 120

Kansas
Kansas State College,* 48
Municipal University of Wichita, 6
University of Kansas,* 60

Kentucky
University of Kentucky,* 66

Louisiana
Louisiana State University,* 38
Loyola University (New Orleans), 11
Tulane University,* 28

Maine
University of Maine, 9

Maryland
University of Maryland, 55

Massachusetts
Boston University,* 96

Michigan
Michigan State College,* 143
University of Michigan,* 68
Wayne University, 58

MINNESOTA
University of Minnesota,* 211

MISSOURI
University of Missouri,* 215
Washington University, 19

MONTANA
Montana State University,* 42

NEBRASKA
Creighton University, 10
University of Nebraska, 45

NEVADA
University of Nevada, 12

NEW JERSEY
Rider College, 17
Rutgers University,* 60

NEW MEXICO
University of New Mexico, 20

NEW YORK
Columbia University,* 66
New York University, 185
St. Bonaventure University, 8
Syracuse University,* 86

NORTH CAROLINA
University of North Carolina, 56

NORTH DAKOTA
University of North Dakota, 15

OHIO
Kent State University, 53
Ohio State University,* 80
Ohio University,* 72
Ohio Wesleyan University, 10

OKLAHOMA
Oklahoma Agricultural & Mechanical College,* 45
University of Oklahoma,* 98
University of Tulsa, 34

OREGON
University of Oregon,* 50

PENNSYLVANIA
Duquesne University, 45
Lehigh University, 6
Pennsylvania State University* 140
Temple University, 67

SOUTH CAROLINA
Furman University, 18
University of South Carolina, 23

SOUTH DAKOTA
South Dakota State College,* 19

TENNESSEE
University of Tennessee, 44

TEXAS
Agricultural and Mechanical College of Texas, 29
Baylor University, 27
Texas Christian University, 22
Texas State College for Women,* 22
Texas Technological College, 22
University of Houston, 61
University of Texas,* 131

UTAH
Brigham Young University, 20
University of Utah, 44

VIRGINIA
Washington and Lee University,* 26

WASHINGTON
State College of Washington, 16
University of Washington,* 120

WEST VIRGINIA
West Virginia University, 35

WISCONSIN
Marquette University,* 135
University of Wisconsin,* 158

WYOMING
University of Wyoming, 16

Total enrollment:

Upper class	4,508
Graduate	601
Total	5,109

In addition to these numbers, a total of 535 were enrolled as special students.

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14. Legal Education

By JOSEPH A. McCLAIN, Jr.*

THE PROFESSION OF LAW is recognized as one of the oldest true professions. Every civilization has developed a system of law which required trained judges and lawyers for its proper administration. The administration of equal and impartial justice by an independent and capable judiciary and bar has long been recognized as indispensable to a democratic society. In the United States lawyers have also furnished a large proportion of our public leadership. The constantly increasing complexity of our society and its legal system raises to great importance the question of what constitutes proper training for those who seek to enter and continue in the profession of law. Clearly, the profession can rise to no greater heights than its source of supply makes possible, which today in the United States is the modern university law school to which has been delegated almost entirely (with the disappearance of the old apprentice system) the furnishing of recruits to the profession. The public and the profession, therefore, necessarily have a great stake in the adequacy and soundness of the quality of legal education provided by the law schools in America.

The Legal Profession

While courts of law have long been established to settle disputes over rights and property, many legal matters are also settled or cared for outside of court by lawyers. The terms "lawyer" and "attorney" are synonymous. An attorney at law is an officer of the court with both public and private obligations; a man set apart to expound to all persons who properly seek him the laws of the land relating to interests of property, liberty, and life. His first duty is to assist in the administration of justice; his second is to his client, with whom relationships imply the highest confidence and trust. He is obliged to be true to the court and to his client; to transact his client's business with care, tact, and skill; to keep his client's confidences; to report to his client the status of his affairs; and to continue to serve his client's interests to a conclusion unless ethical considerations demand his withdrawal from the relationship.

Like the doctor, the attorney may become a general practitioner or a specialist. As specialists, attorneys devote themselves to some phase of law such as: Admiralty law, which relates to maritime affairs, shipping, ocean trade, and accidents at sea; corporation law, or the handling of matters of legal management for corporations; criminal law, defending persons accused of offenses against state and society; tort actions, such as claims in cases of traffic accidents, and other personal and property injury claims; international law, dealing with laws between nations; patent law, searching Patent Office records, registering claims, and prosecuting infringements of patents; real-estate law, searching titles and passing on conveyances; wills and trusts, or the handling of trusts and estates of deceased persons.

In more recent years the rapid growth of administrative tribunals and of the law of taxation and labor relations has developed lawyers who specialize in these new fields of law.

According to the United States Census of 1950 there were at that time 181,226 lawyers in the Nation. (See table 28.) This represents an increase of almost 70 percent during the first half of the twentieth century. The number reported in the census is somewhat smaller than the number of persons who could be called lawyers. The reason is that the Bureau of the Census classifies a person in only one occupation; that is, in the occupation to which he devotes the greater part of his time. As an example, a lawyer who teaches full time or the greater part of his time would be classified as a teacher, not as a lawyer.

Since it is impossible to obtain absolutely accurate figures, the following current statistics are reasonable approximations in even numbers.[1] There are 223,500 lawyers in the United States, of whom 5,000 are women. Of the total, 176,000 are in private practice, 20,000 in government service (Federal, State, and local), 13,000 are salaried in private industry and educational institutions, 7,500 are in judicial offices, and 7,000 are inactive or retired.

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*Dean, The School of Law, Duke University, since 1950. Dr. McClain has served as dean of the law schools of Mercer University, 1927–33; the University of Louisville, 1934–36; and Washington University, 1936–42.

Table 28.—Lawyers in the United States, number by decades, 1900–1950

Year	Number
1900	114,460
1910	114,704
1920	122,519
1930	160,605
1940	180,483
1950	181,226

Source: United States Bureau of the Census.

The period from 1941 to 1946, World War II period, showed a precipitous drop in number of lawyers coming to the bar. There was undoubtedly a shortage of young lawyers during most of the 1940's, and it now seems likely that there will be no surplusage in the near future. Indeed it is highly probable that the services of young lawyers will be in demand for some time to come.

From the preceding figures it will be seen that the services of lawyers are being extensively utilized in government and industry as well as in private practice. Due to the increasing complexity of the social and economic order, which has brought into play more government control through more laws and regulations, demands for legal services are likely to increase.

Professional Associations

A number of bar associations were organized before 1870, but by that date nearly all of them had passed out of existence, and only two city bar associations remained, Philadelphia and Detroit. A new movement began in the 1870's, however, and the American Bar Association, destined to have a great influence on legal education, was organized in 1878. By 1900 State and local bar associations were beginning to form, and the movement developed rapidly. These earlier associations were largely social in character, and it is only within the past 30 years that both the American Bar Association and the local associations have primarily concerned themselves with bringing about a better administration of justice and the improvement of the profession as a great public calling. Today every State has an organized bar association, while 25 States have by law incorporated or integrated their bars to include every lawyer in their respective States as distinguished from membership on a voluntary basis. Such incorporation has usually vested the State bar with power to control admissions to and exclusions from the bar.

The American Bar Association, with over 50,000 members, has within recent years undergone a reorganization, and its policies are now determined by lawyers selected on a representative basis. The Association has had a far-reaching effect upon improvement in standards of legal education and admissions to the bar. Both this association and the local bar associations have taken the leadership in recent years in providing postadmission or continuing legal education for the profession.

In August 1954, the association dedicated its newly completed American Bar Association Law Center in Chicago, which will house its administrative offices and those of several other national legal professional associations. The center is designed to centralize and coordinate professional activities and legal research under a greatly expanded program.

In 1923 the American Law Institute was organized. It is composed of selected lawyers, judges, and law teachers, and its chief objective has been to restate the case law in many important fields. Its work was made possible by substantial grants from the Carnegie Corporation, which has continued to support the institute's program. *The Restatement of Case Law* was never intended to be adopted as a code, but in recent years the institute has prepared several drafts for possible statutory adoption. These include a Code of Evidence, A Youth Authority Act, Rules of Criminal Procedure and a Commercial Code. The institute's work has substantially affected the development of the law.

Another organization which has accomplished much in the promotion of an efficient administration of justice is the American Judicature Society, founded in 1913. Its members are lawyers and judges who are particularly interested in the Society's activities. Its publication, the *Journal of the American Judicature Society*, is designed to serve as a clearinghouse of fact and opinion on all matters connected with the administration of justice in the United States.

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[1] See Albert P. Blaustein. The Legal Profession in the United States: A 1952 Statistical Analysis. *American Bar Association Journal*, Vol. 38, No. 12, Dec. 1952, p. 1006

Legal Periodicals

Legal periodicals abound in the United States. Of the 126 law schools approved by the American Bar Association more than 70 publish law reviews. Typically they contain leading articles by law teachers, lawyers, and judges, together with case notes and comments by students selected on a scholastic basis, and book reviews. Their chief purposes are to encourage worthwhile contributions by legal scholars and to develop in participating students, usually only a few, the skill of careful legal writing. While the periodicals vary considerably in quality and the number of readers—chiefly law teachers, lawyers, judges, and law students—is not large, they have contributed immeasurably to legal scholarship. Courts frequently make use of them, and they have had a substantial effect on the development of the law. Their contents are readily available through general indexes which will be found in any adequate law library. Many State bar associations publish journals devoted to legal problems and affairs of their associations.

In recent years, several new types of scholarly periodicals have been published; one kind is devoted entirely to a certain field of law, such as taxation, crime and law enforcement, public law, air law; another, of which the earliest is *Law and Contemporary Problems*, devotes each issue entirely to a discussion by 8 to 10 authorities in not only the legal but also the economic, social, and political aspects of current topics, such as divorce, small loans, and cooperatives, which cut across many areas of scholarly research.

The American Bar Association publishes monthly the *American Bar Association Journal*, which goes to each of its members. This journal also contains relatively short leading articles dealing with important matters of general legal interest, together with discussions of the work of the association, case notes, and book reviews. Its influence among the profession is constantly growing.

Licensure

Each State, by statute or court rules, has established standards for admission to the bar. These standards are administered by a body usually called the Board of Law Examiners. The applicant must satisfy the board of his eligibility, including residence, character and education, to take the bar examination of that jurisdiction. He must then successfully pass the examination, which is given either once or twice each year. Educational requirements in all but a few States include at least 2 years of college work and 3 years of law school study, although some States permit the law study to be done under a qualified lawyer. A few States require a period of apprenticeship or clerkship before the grant of an unconditional license to practice, but that is not the general rule.

The type and quality of bar examinations show wide divergencies throughout the States, and such divergencies constitute one of the serious problems in legal education today. Many boards have meager financial support, and their work is inadequately compensated, if at all. Dissatisfaction with the wide differences in the adequacy and quality of bar examinations has resulted in a strong movement for a national standard bar examination, but such a development does not appear likely in the near future. Admission to practice before Federal courts and agencies is controlled by special rules of each court or agency.

The National Conference of Bar Examiners has done much excellent work towards improving bar examination standards and techniques. This conference was founded in 1931 and is composed of members of many State boards of bar examiners and character committees who voluntarily join in the conference activities. It meets annually in conjunction with the meeting of the American Bar Association. Its monthly publication, *The Bar Examiner*, contains timely articles on developments and problems pertaining to bar examinations and training for the bar.

Evolution in the United States

Initially, preparation for the legal profession in the United States was greatly influenced by the English system, which was based primarily on apprentice training. Law office training was the common route to the legal profession in America until the late 1800's and was not generally abandoned in favor of law school study until well into the 1900's.

Although chairs of law were established in some American universities in the late 1700's and early 1800's, they were viewed as providing an essential part of a liberal education rather than as designed to prepare for the legal profession.

A few law schools were established by practitioners in the late 1700's, the most notable of which was the Litchfield Law School, Litchfield, Conn., to provide systematic instruction in law, a task which the universities were not then ready to undertake. These schools did not long survive. Although they filled a necessary gap, they were from a long-range point of view the precursors of proprietary law schools. In the 1900's these had become vested interests which seriously impeded the development of sound legal education.

From 1815 to 1870 over a score of law schools were established with university affiliations, but despite some great figures and pioneers in legal education—Parker and Story at Harvard University, Kent at Columbia University, and others—who directed them, legal education in 1870 was at a low level. The course of study was usually 1 year, no educational entrance requirements existed, instruction was severely legal and narrow and was conducted by lectures and text assignments. But at least the foundations had been laid for legal education under university auspices. The spirit of the times was adverse to university legal education, and lawyers clung tenaciously to the belief that education in law involved no more than mastery of a craft.

In 1870 Langdell, of Harvard University, developed the case method of instruction. This was an event of profound significance to legal education. This method, to be discussed more fully later, has remained the central core of legal instruction for more than 80 years. From 1870 to 1900 substantial progress was made in improving the quality of law schools.

In the 1890's the American Bar Association began to take an active interest in adequate legal education, and its leaders did much to promote improvement. The founding of the Association of American Law Schools in 1900 was also a great step forward.

In 1900 law office apprenticeship was still a popular method of training for the legal profession; however, during the past 50 years, and with accelerated movement during the past 25 years, preparation for the profession has been almost entirely delegated to university law schools. Bar admission requirements today generally speak in terms of law school study, although provision is frequently made in such requirements for law-office study. Few applicants today, however, choose that method of preparation.

The twentieth century brought a great increase in the establishment of law schools, a natural development in view of the trend away from law office trai ing as a means of preparation for the legal professio Unfortunately, the slowness of States in establishi standards for gaining admission to the bar tended encourage the operation of many law schools wi low standards as proprietary enterprises and witho university connections. As a result, and at le until the 1930's, many law schools, particularly metropolitan areas, flourished at the expense sound training of their students. Very often fac ties, including housing and library, were total inadequate, and the staff was largely drawn fro practicing lawyers who taught on a part-time ba Today the bulk of instruction is given by full-tim teachers, supplemented in some schools by part-tim teachers who as practitioners have become experts i certain areas of law.

Standards for law schools and for admission to the bar have been greatly increased in the past 30 years. Beginning in 1921, the American Bar Association recommended certain standards that should control admission to the bar and others to be used for determining which law schools should be placed on the association's approved list of schools. At that time only a very few States required any college or law school training as a condition for taking the bar examination. The association, which has never had legal power to require standards, recommended that applicants for the bar should have 2 years of college and 3 years of full-time law school study or 4 years of part-time law school study (late afternoon or evening work). These recommendations have now been adopted by legislative action or court rule in all but a few States. As a result of these actions and the development of the schools of law, legal education has been greatly improved. By 1940 only a few schools remained which did not comply with the minimum standards of the American Bar Association.

The association recommended in 1950 that, effective in the fall of 1952, 3 years of college work be required of entering law students and of candidates for admission to the bar, except in those schools requiring a 4-year full-time program of law study. Such requirements are effective in all law schools approved by the association, but only a few States have thus far adopted this new recommendation.

Association of Law Schools

The Association of American Law Schools was organized in 1900 under the sponsorship of the American Bar Association. Devoted to improvement in legal education, the new association restricted its membership to schools complying with its announced standards, which have been constantly increased.

The Association of American Law Schools initiated in 1948 the publication of its official quarterly—*The Journal of Legal Education.* It serves as a focal point for discussions of legal education and contains descriptions of experiments, reviews of new casebooks and textbooks, debates over different teaching methods and philosophies, and analyses of various teaching problems. It should do much to promote improvements in legal education.

Accreditation

The American Bar Association, through its section on Legal Education and Admissions to the Bar, is generally recognized by public authorities and others as the accrediting body for law schools. The Association of American Law Schools also wields great influence in the field of legal education by prescribing the conditions for schools' obtaining and retaining membership in the association, but it makes no concerted effort to gain acceptance of its standards. For over 30 years, however, the American Bar Association has recommended its standards for law school and bar admissions and has had great success in securing their general acceptance by schools and by public authorities. It maintains a list of approved schools, that is, those meeting its basic standards, which relate largely to adequate quarters, library, full-time teaching staff and general educational policy, including specifically law school admission standards.

The standards of the two associations are similar, and they work in close cooperation. Both have had powerful influence in raising the standards of legal education and admissions to the bar.

Today, of the 167 law schools in operation, 126 are on the approved list of the American Bar Association, and 111 are members of the Association of American Law Schools. While most of these schools are full-time day schools, 46 of those approved by the American Bar Association offer work in the late afternoon or evening and are classified as part-time schools, and their course of study is 4 years. In the fall of 1953, 29 percent of the students in all of the approved schools were enrolled in late afternoon or evening classes.

National Surveys

National surveys of legal education and the legal profession have come about twice during this century through the leadership of the section on Legal Education and Admissions to the Bar of the American Bar Association. In 1913 the section requested the Carnegie Foundation for the Advancement of Teaching to undertake a study of legal education in the United States. As a result three valuable and highly informative reports were published.[8] Not until recent years, however, was there undertaken a comprehensive survey covering not only legal education but also all aspects of the legal profession.

The section on Legal Education and Admissions to the Bar recommended such a survey to the American Bar Association in 1947. This survey, now virtually completed, was begun in 1948 under the general direction of the association, and was substantially supported by funds from the Carnegie Corporation. Its studies have been made by experts in various fields, and many of the reports have already been published in legal periodicals and, in a few instances, in book form. A fairly complete bibliography of such reports appears in the *American Bar Association Journal*, September 1951.

It is contemplated that upon completion all the major reports will be consolidated in book form. The survey has been a monumental undertaking, and when finished it should provide a complete picture of the profession and of legal education in America from the beginning to the present.

Enrollments in Schools of Law

Data on the number of schools of law and their enrollment are not complete, but they do convey some idea of the development of this field of professional education. The annual reports of the United States Commissioner of Education and the Biennial Survey of Education published by the Office of Education, U. S. Department of Health, Education, and Welfare, yield the data set forth in table 29. Inasmuch as the reporting by the schools to the Office is purely voluntary, the data published prior to 1948 were based on partial returns and therefore represent underenumeration both with respect to enrollments and degrees. Since 1948, individual school estimates have been made for the small number of institutions not making returns, and therefore the data reported are practically complete.

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[8] The three reports were: (1) Joseph Redlich, *The Common Law and the Case Method in American University Law Schools.* Carnegie Foundation for the Advancement of Teaching, Bulletin No. 8, 1914, 84 p.; (2) Alfred Zantzinger Reed, *Training for the Public Profession of the Law:* Historical Development and Principal Contemporary Problems of Legal Education in the United States with Some Account of Conditions in England and Canada, Bulletin No. 15, 1921, 498 p.; (3) Alfred Zantzinger Reed, *Present Day Law Schools in the United States and Canada*, Bulletin No. 21, 1928, 598 p.

Table 29.—Enrollments in schools of law in various years, 1870–1953

Year	Schools reporting	Enrollments	
		Undergraduate	Graduate [1]
1870	28	1,653	------------
1875	43	2,677	------------
1880	48	3,134	------------
1885	49	2,744	------------
1890	54	4,518	------------
1895	72	8,950	------------
1900	96	12,516	------------
1905	96	14,714	------------
1910	114	19,567	------------
1915	120	21,923	------------
1920	107	20,992	------------
1926	136	40,359	------------
1930	135	41,426	------------
1932	137	36,217	903
1934	133	34,728	1,717
1936	195	35,734	1,057
1938	----------	36,357	897
1940	----------	31,775	695
1942	----------	20,413	383
1944	----------	7,178	167
1946	----------	------------	------------
1948	141	62,877	1,367
1950	158	56,385	1,608
1952	166	33,333	1,492
1953 (Approved schools)	167	31,866	1,593

[1] Graduate enrollments were not separately reported prior to 1932.

Source: Annual Reports of the United States Commissioner of Education and the Biennial Survey of Education published by the Office of Education, U. S. Department of Health, Education, and Welfare, and the annual reviews of legal education published by the American Bar Association.

The number of students enrolled in schools of law increased steadily from 1885 to 1930, except from 1915 to 1920. There were decreases during the depression years of the 1930's and a marked drop during the years of World War II. After the war there was a sharp rise in the enrollment.

Admission Standards

In all schools, approved by the American Bar Association today, 3 years of satisfactory college work is required for admission, except in several schools which have established a 4-year law curriculum and may admit on the basis of 2 years of college credit. In any event, at least 6 years of college and law school credit is necessary to obtain the bachelor of laws degree in a full-time school or 7 years in a part-time school. Many law schools have arrangement with the undergraduate college their university for a combined course of study und which the bachelor of arts and bachelor of la degrees may be obtained in this 6-year period.

The question often arises as to the type of prele college education which should be chosen. In co trast to some other types of preprofessional traini there is no requirement by law schools concerni the specific content of college courses that qualify fo admission. A number of schools require applican to take the law school admission test, which is ad ministered by the Educational Testing Servic, Princeton, N. J., and several schools give their own aptitude tests. While nearly all law schools would admit the value and importance of thorough training in the use of English and the desirability of training in the social sciences—history, political science, economics, and sociology—such suggestions as may be made are advisory and not mandatory. The quality of the college instruction and the ability of the student have been accepted as the importan factors in law school success, but there has been much discussion about a better integration of prelegal education and law study.

Curriculum, Method of Instruction, and Degrees

The problem of devising a satisfactory law curriculum in the light of modern conditions continues to be a most difficult one. Three years full time or four part time has been the standard length of law school study for at least 30 years. Within the last 25 years, however, the development of new fields of law—administrative law, taxation, labor law and others—has brought about the necessity of making room for many new courses in an already crowded curriculum. Most schools base graduation on the completion of 75 to 80 semester hours of law credit, and yet many schools find it desirable to offer a total of 100 to 140 semester hours of courses in the 3-year period. Obviously, no student can take all these courses in that time. Consequently schools have tended to devise curriculums in which the first 2 years include the so-called fundamental courses and the third year is composed largely of elective courses. This arrangement permits the student to choose among courses more or less in the nature of specialties. The constant pressure to provide training in important new areas of law as well as more practical training has stimulated discussion of lengthening the law curriculum to 4 years. In fact, some schools have taken this step through admitting students on

2 years of college work, while a few others have required an additional summer.

Law school instruction is now founded principally on the case method of instruction, to whose origin reference has been made. This method involves the use of selected appellate decisions which the student is expected to study and analyze so that he may understand the facts of the case, the questions of law involved, and the reasoning of the court's opinion. In the classroom this method becomes a colloquy or "give and take" discussion between instructor and student, often spoken of as the Socratic method, and calls for a high degree of skill by the instructor. It has supplanted the lecture and text study as principal methods of instruction. Although dissatisfaction has been expressed with the case method, particularly when it is relied upon exclusively, it remains the core of law school instruction. In recent years casebooks have included, in addition to cases, relevant materials from the social sciences and other fields.

The undergraduate law degree which qualifies one to take the bar examination is the degree of bachelor of laws, LL. B., although a few schools award instead the degree of doctor of jurisprudence, J. D. The latter degree does not represent graduate study. The number of degrees in law granted in various years since 1874 are shown in table 30.

Graduate Work

A number of law schools offer graduate study upon completion of the bachelor-of-laws degree. Such graduate study is becoming much more common due at least to two factors: (1) the desire to pursue some specialized courses for which there was no opportunity in undergraduate study, and (2) as a means of better preparation for those who may plan a law-teaching career. Usually, a period of 1 year of successful graduate study leads to the degree of master of laws (LL. M.). A few law schools offer opportunity for a second year of graduate study, consisting largely of advanced research and writing, to those who distinguish themselves in the first year. The additional year leads to a doctor's degree in law, which is comparable to the doctor of philosophy degree. The graduate law degree is usually called doctor of juridical science (S. J. D.) or doctor of the science of law (J. S. D.).

The number of graduate students in law and the number of graduate degrees conferred in law in recent years are shown in tables 29 and 30.

Table 30.—Degrees conferred in law, number in various years, 1874–1953[1]

Year	First professional (undergraduate)	Master's and second professional	Doctor's
1874	917	----------	----------
1875	814	----------	----------
1880	1,089	----------	----------
1885	976	----------	----------
1890	1,424	----------	----------
1895	2,717	----------	----------
1900	3,241	----------	----------
1905	3,435	----------	----------
1910	4,233	----------	----------
1915	4,427	----------	----------
1920	3,273	----------	----------
1926	7,938	----------	----------
1930	8,874	----------	----------
1932	8,906	343	59
1934	8,577	635	60
1936	7,423	447	23
1938	7,969	415	31
1940	7,168	340	35
1942	5,733	125	35
1944	1,394	43	24
1946	----------	----------	----------
1948	10,990	394	247
1949	14,366	469	33
1950	14,312	513	27
1951	14,338	497	46
1952	12,558	456	46
1953	11,329	460	42

[1] Graduate degrees were not separately reported prior to 1932.

Source: Annual Reports of the United States Commissioner of Education and the Biennial Survey of Education, published by the Office of Education, U. S. Department of Health, Education, and Welfare.

Postadmission or Continuing Legal Education

Only within the past 20 years has general recognition come in the profession that a lawyer, regardless of age and experience, needs professional education beyond his own practice if he is to keep abreast of the development of modern law. The rapid growth of entirely new fields of law in this period has brought the necessity for additional organized study by the lawyer. The medical profession recognized this need for its members many years ago, and annual or more frequent clinics were provided to which the physician might go to learn new discoveries and techniques in medical science.

Within recent years comparable programs for lawyers have been sponsored by State and local bar associations, generally with the cooperation of law schools. Many of these legal clinics or institutes deal with relatively new areas of law, such as taxation and labor law, while some pertain to new developments in older fields and to practice methods and techniques in general.

The need for an adequate program of continuing education of the bar has resulted in a plan under which the American Bar Association and the American Law Institute provide a central office for the publication of suitable legal materials for the use of, and for the furnishing of further assistance to, State and local bars throughout the country desiring to conduct legal institutes or clinics. It appears that this general movement to provide continuing legal education for the bar will grow in importance and value in the years ahead.

Current Educational Problems

In a short space only a few of the more important legal educational problems can be discussed, and no attempt will be made to suggest solutions.

Overcrowded curriculum.—Reference has been made to the problem of adjusting the standard 3-year law curriculum to cover subject matter necessary for present conditions. Some effort has been made to meet the problem by complete reorganization of the curriculum, including condensation and other rearrangements. The problem remains a most serious one, for many important courses are offered in law schools that a student cannot possibly take within the 3-year period. Again, pressure for more practical training, discussed later, raises additional problems.

Methods and materials of instruction.—Closely allied with the time problem is the question whether the case method of instruction, which does not permit rapid coverage of material, should retain its dominant role in instruction. Criticisms of it include, among others, its time-consuming character, the tendency of instructors to rely on it as self-sufficient and thus to exclude other relevant political, social and economic data, and the fact that lack of skill in its use renders it ineffective.

Fundamental to this criticism is the fact that the content of law is complex and consists of more than mere judge-made law, and that breadth of learning is essential to law study. Law does not operate in a vacuum and should not be isolated from the world about it, and there are other disciplines intimately related to law. In any event, the trend is to include a substantial amount of extra-legal materials in the modern case book, and also to insert text discussions, excerpts from law review articles, reproduction of statutes, legal forms, and various other material Nevertheless, case instruction is and promises remain a vital factor in legal education as its core method. In advanced classes, however, provision being made for seminars and courses in which draftmanship is emphasized, and in such work the ca method is not needed.

Prelegal education.—Reference has been made the fact that the content of prelegal training is n specified by law schools. Many law schools, however recommend desirable subject matter for prelegal training. There has been considerable criticism th no effort is made to integrate prelaw and law training, and that they are in effect divorced from each other. The truth is that neither law teachers no lawyers agree on the content of prelegal training It is also realized that communion with great teachers, regardless of subject matter, is valuable educational experience, and all knowledge "is grist for the mill" in law, which affects all human activity. It has been suggested, however, that there are limited areas of essential training that should be insisted upon—proficiency in English, for example, is universally recognized as necessary for the competent lawyer. Another problem, not related to content, is the inability of many students to relate their college training to law study. This is a problem of synthesis and fusion of knowledge that cannot necessarily be solved merely by prescribing content of the prelaw course.

Practical training.—There is general recognition that a gap exists between the law schools and practice. With the disappearance of law-office training in which the practical predominated, and the assumption of training for the profession by university law schools, this gap has caused much discussion and recurrent criticism. One answer might be the provision and requirement of apprenticeship training before an unconditional license to practice was granted. Unlike England and other European countries, which have well established apprenticeship or intern systems, in the United States no real effort has been made to provide such a system following law-school graduation. Admittedly, the establishment of a comprehensive system would be extremely difficult because of the large number of persons involved and other factors.

Thoughtful students of the problem recognize that the law school cannot possibly train in all aspects of "know how" practical skills. The law schools, unlike medical schools which have hospitals accessible, have no "legal hospitals" available. The time element plus absence of actual practice conditions precludes turning out a finished practitioner. However, law schools can do a great deal toward bridging the gap between law school and practice, and many schools are devoting increasing attention to this objective. Careful legal writing and draftsmanship are being emphasized by many schools and practice and moot courts and other measures are being used in quite a number of schools.

A promising device that offers practical training with live clients and problems is the legal-aid clinic, which some schools are using. The clients are in need of legal services and are unable to pay fees. The most successful clinics, from an educational viewpoint, are wholly operated and financed by the schools themselves as distinguished from those maintained by local agencies in which law students participate as occasion permits. This type of clinic is costly, but it can be better integrated into the educational program of the school. That such clinics have practical values seems unquestionable, but finances must be found to operate them, and adequate clientele and legal problems must also be available for successful operation.

The ultimate solution for the provision of adequate practical training for the young lawyer entering practice on his own would seem to be one of joint responsibility of the profession, the bar examiners, and the schools.

Financial support.—Good legal education has too often been thought of as relatively inexpensive to maintain. A great many ills in legal education come from financial starvation as compared to sums spent on other forms of professional education and research. This is somewhat anomalous in view of the significant position the legal profession holds in a free, democratic society. No profession is more deeply affected with a public interest nor wields a greater influence in the shaping of our policies which vitally affect life, liberty, and property. Yet vast sums are spent on research and training in the physical and mechanical sciences, while only a pittance is spent in law.

It is common knowledge that law schools are poorly financed. Part of the reason is found in the successive steps in the evolution of legal education—from apprentice training to practitioner-conducted classes, to law schools cheaply administered, to university programs of legal education and research which if properly conducted demand vastly greater sums of money than are now available.

Legal research has tended to be narrowly conceived in terms of legal materials alone. Law is concerned with complex social, economic and political facts, and little research related to these aspects has been conducted. The revealing studies of the efficacy of penal treatment and of the causes of juvenile delinquency that have been made are illustrations of what is needed in many other areas. Such research is expensive, and so far the funds have not been forthcoming.

Inadequate financing has meant that the law schools as a whole have been mass producers on a low-cost basis. In many schools students are taught in large classes without much opportunity for supervised individual work. It is the belief of many that the training should be as individual as possible, for there is nothing more individual than the professional man's practice. The more legal training savors of mass production the less likely is the student to develop the greatest capacity and attain the ideal of what a lawyer should be.

Bar examinations.—The disparities in type and quality of bar examinations present a serious problem to legal education. General agreement exists that there should be a public authority beyond the law schools to test the graduate's privilege to practice law. So long, however, as many bar examinations are poorly devised and administered and are not correlated with current legal education, the schools will be handicapped in planning their educational programs. It is essential to law students that they pass bar examinations after graduation, and they tend to keep a strict eye on such tests while in school. Many times they sacrifice valuable educational training in an effort to prepare for bar examinations which are poorly devised in the light of modern standards. Closer working relations between law schools and bar examiners in an effort to coordinate legal education and bar examination methods and objectives would do much to improve the situation.

Training for public leadership.—The obligation to train in the ideals and standards of the profession so far as the practice of law is concerned has long been regarded as fundamental in legal education. Lawyers have furnished, however, a large proportion of the public leadership since the beginning of the Nation. Undoubtedly such leadership requires understanding of the values upon which the structure of our Government rests. In view of this, do the law schools have a duty to train expressly for responsible public leadership? Many today answer this question in the affirmative and say that law schools should devise methods and materials for training in the ideals of the Government which so many lawyers will serve as leaders. According to this view, absorption of ideals from teachers by the contagion process is not sufficient; instead a definite training program is suggested. This proposal would call for reexamining the function of a lawyer in our kind of society. What are his responsibilities as a lawyer and as a citizen, and by what methods and materials can the teaching of moral values and responsibilities in a democratic society be accomplished?

The Association of American Law Schools has recently undertaken a study, through committees, of this problem and is seeking aid from philanthropic and educational foundations to conduct surveys in the hope that a worth-while training program can be recommended.

Approved Law Schools and Enrollments

The 126 law schools approved by the American Bar Association, together with their enrollments in the fall of 1953, are indicated below. The first figure states the number of students enrolled in curriculums leading to the first professional degree; the second figure is the number working for advanced degrees. Special and unclassified students are not included in the figures.

Alabama

University of Alabama, 234, 0

Arizona

University of Arizona, 173, 0

Arkansas

University of Arkansas, 77, 0

California

Loyola University of Los Angeles, 324, 0
Stanford University, 327, 0
University of California (3 schools), 1,021, 11
University of San Francisco, 162, 0
University of Santa Clara, 39, 0
University of Southern California, 321, 137

Colorado

University of Colorado, 155, 0
University of Denver, 205, 4

Connecticut

University of Connecticut, 271, 2
Yale University, 488, 31

District of Columbia

The American University, 216, 0
Catholic University of America, 37, 18
Columbus University, 89, 0
Georgetown University, 828, 57
George Washington University, 854, 86
Howard University, 112, 0
National University, 151, 12

Florida

Stetson University, 67, 0
University of Florida, 231, 0
University of Miami, 783, 11

Georgia

Emory University, 134, 0
Mercer University, 73, 0
University of Georgia, 101, 0

Idaho

University of Idaho, 64, 0

Illinois

Chicago-Kent College of Law, 178, 0
DePaul University, 442, 0
John Marshall Law School, 298, 55
Loyola University, 219, 0
Northwestern University, 294, 5
University of Chicago, 235, 11
University of Illinois, 253, 5

Indiana

Indiana University, 395, 8
University of Notre Dame, 240, 0
Valparaiso University, 69, 0

Iowa

Drake University, 119, 6
State University of Iowa, 181, 3

Kansas

University of Kansas, 142, 0
Washburn University of Topeka, 154, 0

Kentucky

University of Kentucky, 109, 0
University of Louisville, 172, 0

Louisiana

Louisiana State University and Agricultural and Mechanical College, 146, 0
Loyola University, 99, 0
Southern University and Agricultural and Mechanical College, 8, 0
Tulane University of Louisiana, 162, 6

Maryland

University of Maryland, 379, 0

Massachusetts

Boston College, 448, 0
Boston University, 699, 0
Harvard University, 1,435, 60
Northeastern University, 89, 78
Suffolk University, 261, 0

MICHIGAN

Detroit College of Law, 265, 0
University of Detroit, 339, 0
University of Michigan, 660, 17
Wayne University, 426, 55

MINNESOTA

St. Paul College of Law, 148, 0
University of Minnesota, 393, 11

MISSISSIPPI

University of Mississippi, 100, 0

MISSOURI

Lincoln University, 17, 0
St. Louis University, 295, 0
University of Kansas City, 264, 0
University of Missouri, 117, 0
Washington University, 138, 0

MONTANA

Montana State University, 90, 0

NEBRASKA

Creighton University, 90, 0
University of Nebraska, 160, 0

NEW JERSEY

Rutgers University (2 schools), 341, 15
Seton Hall University, 214, 2

NEW MEXICO

University of New Mexico, 53, 0

NEW YORK

Brooklyn Law School, 1,294, 109
Columbia University, 683, 6
Cornell University, 310, 4
Fordham University, 637, 0
New York University, 974, 655
St. John's University, 820, 0
Syracuse University, 200, 0
Union College and University, 220, 0
University of Buffalo, 310, 0

NORTH CAROLINA

Duke University, 114, 2
North Carolina College at Durham, 10, 0
University of North Carolina, 184, 0
Wake Forest College, 75, 0

NORTH DAKOTA

University of North Dakota, 82, 1

OHIO

Franklin University, 101, 0
Ohio Northern University, 65, 0
Ohio State University, 374, 1
University of Cincinnati, 138, 5
University of Toledo, 172, 0
Western Reserve University, 277, 0

OKLAHOMA

University of Oklahoma, 216, 0
University of Tulsa, 183, 7

OREGON

University of Oregon, 78, 0
Willamette University, 110, 0

PENNSYLVANIA

Dickinson School of Law, 194, 0
Temple University, 454, 20
University of Pennsylvania, 367, 5
University of Pittsburgh, 229, 0

PUERTO RICO

University of Puerto Rico, 99, 0

SOUTH CAROLINA

South Carolina State College, 10, 0
University of South Carolina, 117, 0

SOUTH DAKOTA

University of South Dakota, 66, 0

TENNESSEE

Cumberland University, 65, 0
University of Tennessee, 124, 0
Vanderbilt University, 109, 1

TEXAS

Baylor University, 132, 0
St. Mary's University of San Antonio, 160, 3
Southern Methodist University, 299, 49
Texas Southern University, 34, 0
University of Houston, 164, 0
University of Texas, 682, 6

UTAH

University of Utah, 174, 0

VIRGINIA

College of William and Mary, 58, 0
University of Richmond, 76, 3
University of Virginia, 336, 3
Washington and Lee University, 108, 0

WASHINGTON

Gonzaga University, 139, 1
University of Washington, 291, 0

WEST VIRGINIA

West Virginia University, 140, 0

WISCONSIN

Marquette University, 213, 0
University of Wisconsin, 480, 6

WYOMING

University of Wyoming, 46, 0

Total:

In courses for the first professional degree:	
Men	30, 575
Women	1, 291
Total	31, 866
Graduate students	1, 593

In addition, the approved law schools enrolled 964 special and unclassified students.

The 41 law schools not approved by the American Bar Association enrolled 4,682 students in courses for the first professional degree, 126 who were graduates, and 108 special and unclassified students.

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15. Education for Library Service

By WILLARD O. MISHOFF*

EXTENSIVE COLLECTIONS of books and manuscripts have been characteristic of western civilization since ancient times, but libraries and librarianship as they are known today did not emerge until the middle of the 19th century. School, college, and public libraries in the United States began in the colonial period and have paralleled the growth of other educational institutions contributing toward a cultured and democratic nation. Scholarly and specialized libraries, which have developed in universities and other institutions engaged in scientific and technological research, comprise basic resources for the advancement of learning and the promotion of material progress. During the past one hundred years librarianship has evolved from a mere custodial function to an applied science making possible the educational and technical services of libraries in this country.

Services of the Library Profession

The basic services of librarians have been officially summarized as follows:

"Librarians are chiefly concerned with making printed matter of all types (books, periodicals, pamphlets, maps, legislative reports, and historical documents) readily available for the use of students, research workers, legislators, Government officials, and the public generally. They investigate the reading interests and demands of the people served by the library, and adjust the services of the library to suit the needs of its community. They publicize the library services by means of bulletins, bibliographies, and newspaper stories. They select and purchase books and other materials; use established methods for classifying, cataloging, shelving, and circulating books; and assist readers to find books and information best suited to their individual interests. They help children and young people in or out of school to broaden their acquaintance with books and to acquire a taste for reading. They give special service to adults as to which books may entertain them or give them desired information. They assist school systems in setting up elementary and advanced classes in cultural subjects, and foster reading and discussion groups for adults who wish to continue their education. In addition, they coordinate the work of the library with that of other departments in a school, university, or research organization, or with other agencies of a city, county, State, or the Federal Government." [1]

Number of Librarians

Some idea of the growth of the library profession in the United States may be obtained from statistics published by the Bureau of the Census. According to this source, the number of persons employed as librarians in this country increased nearly eightfold from 7,423 in 1910 to 55,330 in 1950, with the greatest increase in the last decade (table 31).

Table 31.—Librarians in the United States, number by decades and sex, 1910–50

Year	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
1910[1]	7,423	100.0	1,594	21.5	5,829	78.5
1920[1]	15,297	100.0	1,795	11.7	13,502	88.3
1930[1]	29,613	100.0	2,557	8.6	27,056	91.4
1940[2]	36,007	100.0	3,641	10.1	32,366	89.9
1950[2]	55,330	100.0	6,303	11.4	49,027	88.6

[1] U. S. Bureau of the Census. *Sixteenth Census of the United States: 1940 Population. Comparative Occupation Statistics for the United States, 1870 to 1940.* Washington, U. S. Government Printing Office, 1943. p. 49 and 70.

[2] U. S. Bureau of the Census. *United States Census of Population: 1950. Detailed Characteristics, U. S. Summary.* 1950 Population Census Report P–C1. Washington, U. S. Government Printing Office, 1953. p. 261 and 267.

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[1] U. S. National Roster of Scientific and Specialized Personnel. *The Job of Librarian.* Washington, D. C., U. S. Government Printing Office, 1945. p. 1–2.

Noteworthy is the change in the relative proportion of men and women in librarianship from 1910 to 1950. Of the 7,423 librarians employed in 1910, 21.5 percent were men and 78.5 percent were women. By 1950, however, of the 55,330 librarians employed, only 11.4 percent were men, while 88.6 percent were women.

Supply and Demand in the Library Profession

Librarianship in the United States has been a continuously expanding profession, and it offers to young people of various backgrounds and talents opportunities for significant public service. Library schools and associations stress a nationwide demand for well-qualified librarians and currently point to a critical shortage. There is a specific need for librarians who offer marked aptitude for administration, social understanding and sympathy, and a sound body of subject knowledge. Trained librarians especially are needed as heads of public libraries in smaller cities and towns. A survey of the placement of graduates from accredited library schools in the United States in 1953 indicated that the greatest shortages appeared in cataloging, library work with children, school librarianship, and special library services in science and technology. The shortage for school librarians is especially acute.[2]

Recognizing that the demand for and supply of personnel are of major interest to the entire library profession, the American Library Association and over 60 regional, State, and special library associations are represented in a Joint Committee on Library Work as a Career, created in 1947. This committee plans and sponsors with its constituents a coordinated nationwide program of recruiting for librarianship.

Licensure of Librarians

For many years the licensure of librarians has served the interests of the public as well as the library profession. It insures that competent personnel will administer libraries supported by public funds, and it safeguards the community or institution against the appointment of persons unqualified for librarianship.

The licensure of librarians has taken two forms: (1) legal, and (2) voluntary. Certification under State laws has been a development since about 1910. To date it has applied to the personnel of municipal, county, or regional libraries in at least 24 States, in 5 of which certification is also required of libra employees in institutions of higher education. I those States which require the licensure of librari a board or other official body is commonly autho ized to determine the grades and types of certific and to administer the program. Such a certificati authority is usually appointive and includes repr sentatives of the library profession as well as t public. There is provision for the certification school librarians as an adjunct of teacher certific tion in at least 41 States and the District of C lumbia.

In some localities civil-service status is requi of public library personnel either in place of, or su plementary to, State certification. The library pr fession, however, has favored State certification i preference to civil-service status for librarians, an has tended to oppose the latter policy as an admini trative handicap limiting the appointive power o the library board.

In at least 10 States certification of librarians ha been effected on a voluntary basis largely throug the State library associations which issue the ap propriate credentials.

Extensive library services are rendered in the civ and military areas of the Federal Government by personnel whose competence has been attested by the United States Civil Service Commission or th National Defense Establishment. Under these regu lations qualified Federal library personnel are class fied according to the responsibility and difficulty o their duties, are provided with equitable compensa tion for clearly defined responsibilities, and ar protected as to conditions of employment.[3]

Professional Organizations of Librarians

In 1876, a representative group of profession librarians assembled in Philadelphia during th Centennial Exposition and founded the America Library Association (ALA), which exists today t promote library service and librarianship. Amon its 20,000 members the ALA includes not only prac ticing librarians in the United States, Canada, an Mexico, but "any person, library or other institutio interested in library work,"[4] notably library trustee publishers, booksellers, and organizations directl concerned with libraries and library service. Th association is represented in numerous education and other organizations, groups, and committees to whose activities libraries are pertinent. The professional education of librarians is one of the major concerns of the American Library Association.

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[2] Donald Everett Strout, Librarians—supply short—salaries strong. *Library Journal*, vol. 79, No. 11, June 1, 1954. p. 1016–21.

[3] Ralph McNeal Dunbar, Status of Personnel. *Library Trends*, vol. 2, N 1, July 1953, p. 63–83.

[4] Constitution and Bylaws of the American Library Association. *Al Bulletin*, vol. 47, No. 11, December 1953, p. 581.

A number of other national library organizations represent specialized areas of librarianship. Some of these are divisions of the American Library Association, such as the Association of College and Reference Libraries. Others are independent national associations, such as the Special Libraries Association.

In addition to the national library associations there are numerous regional, State, and local library organizations, all of which aim at improving the service of libraries within their respective areas and at advancing the welfare of their members. These associations have been actively concerned with problems of library recruiting, training, and certification.

Library Periodicals

Professional library periodicals including articles on library education are numerous and are issued by commercial firms, universities, associations, and individual libraries. The *Library Journal*, which was established in 1876, served until 1907 both as a professional journal and as an official medium for the American Library Association. Since that date it has been a periodical for librarians in general. The *ALA Bulletin* has represented the ALA since 1907. Meeting the special needs of librarians on the operational level is the *Wilson Library Bulletin*, a commercial publication. On the scholarly side is *The Library Quarterly*, founded in 1929 and edited in the Graduate Library School of the University of Chicago, as an outlet for research in library science. To meet the need for a medium reporting the status and progress of various areas of librarianship, the University of Illinois Library School has published *Library Trends* since 1952. Furthermore, nearly every national professional library association publishes an official journal, as do many State library agencies.

Development of Library Education

The history of education for librarianship is readily divisible into three major periods: (1) apprentice training before 1887; (2) library vocational training agencies, 1887 to 1923; and (3) college and university library schools, 1923 to date.

Prior to 1887, libraries were small by modern comparison, librarianship was primarily custodial, and the techniques of management were relatively simple. The limited clientele of public libraries was highly literate, and the educational demands upon librarians were modest. College libraries were maintained primarily to serve the faculty and only incidentally the students, so that the duties of librarian were easily performed by an available professor. As libraries grew in size, however, methods were devised locally to organize and preserve the collections, and these techniques were passed on to apprentices and other library workers through personal and class instruction. For executive librarians and their associates, library experience or scholarly attainments sufficed as professional background. In general, librarians and governing boards in that period saw little need for formal library training.

The period from 1887 to 1923 saw the establishment of numerous training agencies for librarians throughout the United States. Library institutes, classes, and schools were conducted by local public libraries, State library agencies, and some institutions of higher education to meet the demand for trained library organizers which was stimulated by the widespread erection of Carnegie library buildings. There was also the need for schools and colleges to meet the library standards of State educational authorities and regional accrediting associations. These library training programs reflected the philosophy and methods of the vocational schools of that time.

The third period in the development of library education in the United States extends from 1923 to the present time. A majority of the accredited library schools were established during this period in connection with programs of higher education, and they have achieved a recognized status in professional education.

The course of the library school movement has paralleled the nationwide extension of libraries. It was stimulated not only by the need for trained library personnel but also by generous financial assistance from foundations and universities. The first library school in the United States was founded in 1887 at Columbia College in New York City. From 1887 to 1953, at least 45 professional library schools were established in this country. Of these, nine were merged with other training agencies or were discontinued. Of the 36 accredited library schools existing in the United States, only 4 were established before 1900; 8 from 1900 to 1919; 19 from

1920 to 1939; and 5 from 1940 to 1953.[5] All but a few graduate library schools have been accredited by the American Library Association.

Surveys and Studies

Education for librarianship today shows the cumulative effect of critical surveys and studies made by foundations, professional associations, library schools, and outstanding librarians. A number of important investigations were made possible by grants from the Carnegie Corporation of New York and reflect its sustained interest in the development of libraries and librarianship. During the first two decades of the 20th century, the library movement in the United States was stimulated by the extensive donations of library buildings by Andrew Carnegie and the Carnegie Corporation of New York. In 1917, the corporation commissioned Alvin S. Johnson, economist and educator, to evaluate these library benefactions and suggest others. The Johnson report[6] recommended the improvement of library personnel through financial aid both to schools and to students of librarianship. In 1919, therefore, the Carnegie Corporation employed Charles C. Williamson, of the New York Public Library, later director of the Information Service of the Rockefeller Foundation, to survey the existing library training agencies.

The recommendations of the Williamson report, published in 1923, (*a*) advocated a distinction between professional and clerical work in libraries with appropriate training for each, (*b*) recommended a certain degree of standardization in a basic year of library study, (*c*) declared that professional library education should be conducted on a strictly graduate level, (*d*) stated that a library school should be a part of a university with the prestige of any other professional school, (*e*) pointed to a need for faculty qualifications and salary appropriate to graduate status, (*f*) favored opportunities for inservice training, and (*g*) urged the establishment of an authority to assist library schools in developing and enforcing library training standards.[7] These recommendations have remained the foundation of library education programs since 1923.

To encourage the implementation of the Williamson recommendations, the Carnegie Corporation of New York adopted in 1926 a program to pro the professional education of librarians thro scholarships, fellowships, and grants-in-aid to brary schools. At intervals during the next years, the corporation sought to evaluate this p gram. The initial survey was made by Ra Munn, director of the Carnegie Library of Pi burgh. His report, in 1936, summarized cur criticisms of library education and advocated t programs of advanced study be offered by stra gically located library schools.[8]

Within the following decade, new library scho were established, and the Carnegie Corporati retained Joseph L. Wheeler, formerly librarian Enoch Pratt Free Library in Baltimore, to reexami the status of library training. The Wheeler repo in 1946 reiterated the need for strong library schoo advocated some specialization in training areas b each school, and recommended a concerted progra to recruit for librarianship young people of mark aptitude and ability.[9]

In 1946, at the request of the American Librar Association, the Social Science Research Counc undertook a comprehensive study of librarianshi in the United States through the Public Librar Inquiry, which included a survey of professio education in accredited library schools. The stud was underwritten by the Carnegie Corporation an was directed by Robert D. Leigh, formerly presid of Bennington College, who summarized the finding on education for librarianship. The Leigh repo concluded that, while the accredited library schoo in 1948–49 varied greatly in size, academic stat and intellectual resources, their inclusion in university systems had resulted in improved instructional facilities, faculty status, and standards o professional library education.[10]

Accreditation of Library Schools

In 1924, the American Library Associatio following the recommendation of the Williamso report, established a Board of Education for Librarianship. The general purpose of this board is t study library service and its changing needs, and t promote the further development of education fo librarianship. Among its functions, the board (a) investigates the extent to which library training agencies meet the needs of the profession; (*b*) formulates, for approval by the ALA Council, minimum standards for library schools and other educational agencies; (*c*) classifies these agencies in accordance with the standards adopted; (*d*) plans for the correlation of programs offered by various library schools; (*e*) advises in regard to grants of funds for library education; (*f*) recruits for librarianship; and (*g*) establishes close relationships with other agencies concerned with professional education.[11]

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[5] Accredited Library Schools. *ALA Bulletin*, vol. 47, No. 11, December 1953. p. 589–590.

[6] Alvin Saunders Johnson, *A Report to Carnegie Corporation of New York on the Policy of Donations to Free Public Libraries.* New York, N. Y., Carnegie Corporation of New York, 1917. 65 p.

[7] Carnegie Corporation of New York, *Training for Library Service.* A Report Prepared for the Carnegie Corporation of New York, by Charles C. Williamson. New York, N. Y., The Merrymount Press, 1923. p. 136–146.

[8] Ralph Munn, *Conditions and Trends in Education for Librarianship.* Ne York, N. Y., Carnegie Corporation of New York, 1936. 49 p.

[9] Joseph Lewis Wheeler, *Progress & Problems in Education for Librarianshi* New York, N. Y., Carnegie Corporation of New York, 1946. 107 p.

[10] Robert Devore Leigh, The Education of Librarians. *In* Alice Isabel Bry *The Public Librarian; a Report of the Public Library Inquiry.* New York, N. Columbia University Press, 1952. p. 299–425.

The Board of Education for Librarianship consists of five members of the ALA appointed for 5-year terms by the president, with the approval of the executive board. Effort is made to have the personnel of the board reflect various areas of librarianship directly affected by library education. The policies of the board are subject to the approval of the ALA Council.

Of the 36 currently accredited library schools in the United States, 33 were rated by the Board of Education for Librarianship (BEL) under minimum requirements adopted by the ALA Council in 1933. New standards of accreditation were adopted by the council in 1951 as more suitable to the graduate programs carried on in a majority of library schools since 1948. Three of the library schools established since 1933 have been accredited by the board under the standards of 1951. A reevaluation of the schools rated according to the 1933 standards will be undertaken by the BEL as rapidly as staff and budget permit.

Associations for Library Education

Organized professional efforts in behalf of education for librarianship have been made chiefly through library associations, two of which have been concerned primarily with professional training.

The multiplication of library training agencies throughout the United States in the early years of the 20th century led to the founding in 1915 of the Association of American Library Schools. Membership in this association is now confined to representatives of the faculties and administrative staffs of library schools accredited by the Board of Education for Librarianship. Largely through the mediums of newsletters and periodic meetings, the Association of American Library Schools exchanges among its members information on educational problems of mutual concern.

The Library Education Division of the American Library Association was established in 1946 "to advance the interest of librarianship through the maintenance and improvement of standards in education for librarianship and through the study of personnel problems." [12] The membership of this division includes practicing librarians and library educators who are directly concerned with the effectiveness of preservice and inservice programs of library training.

Library School Enrollments

In response to the demand for librarians stimulated by the nationwide library movement, enrollments in schools of library science have increased steadily since 1887, with some annual fluctuation. The first library school in the United States reported in 1887–88 a total enrollment of 33 students.[13] By 1902–03, five library schools reported a total enrollment of 142 students (table 32). In 1922–23, at the time of the Williamson survey, 16 library schools enrolled a total of 630 students. A decade later, 25 accredited library schools reported a total enrollment of 1,230 students. Data collected by the American Library Association and reported to the Office of Education indicate that a total of 2,697 students were enrolled in the 36 accredited library schools of the United States as of March 1, 1953. The increased enrollment in late years may be attributed, among other

Table 32.—Student enrollment in library schools in the United States, 1887–1953

[Enrollment in summer courses, library institutes, and unaccredited library schools (since 1924) not included]

Year	Number of institutions reporting	Number of students	Year	Number of institutions reporting	Number of students
1887–88	1	33	1922–23	16	630
1892–93	3	54	1927–28	16	840
1897–98	4	95	1932–33	25	1,230
1902–03	5	142	1937–38	27	1,528
1907–08	9	280	1942–43	32	1,640
1912–13	10	335	1947–48	35	1,746
1917–18	12	488	1952–53	36	2,697

Source: Official reports of library schools and the American Library Association.

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[11] American Library Association, Committees and Boards, 1953–54. *ALA Bulletin*, vol. 47, No. 11, December 1953, p. 542.

[12] American Library Association, Divisions and Round Tables of the Association. Ibid., p. 567.

[13] Columbia College, School of Library Economy, *Annual Register*, 1887–88. New York, N. Y., 1888. p. 11.

causes, to the demand created by a nationwide shortage of librarians, and to concerted professional recruiting activities.

Preprofessional Education for Librarianship

Consistent with institutional policies regarding graduate study, professional library schools commonly require for entrance (*a*) graduation from an approved 4-year college or university; (*b*) a superior undergraduate academic record; (*c*) evidence, through credit or examination, of a mastery of fundamental library techniques; and (*d*) a reading knowledge of at least one foreign language. Skill in typewriting is usually expected of students in library schools. Practical library experience is advised, [illegible] seldom required of persons entering library schools for the basic year of graduate study.

As an undergraduate, the prospective librarian is expected to acquire a broad foundation including (*a*) an orientation in the natural and social sciences and humanities, (*b*) a knowledge of government and democracy, (*c*) an understanding of individuals and groups served by libraries, (*d*) a familiarity with the literature of various subject fields, (*e*) a facility in oral and written communication, (*f*) a reading knowledge of one or more modern foreign languages, and (*g*) some concentration in at least one subject area as preparation for special library service or for advanced study.

Undergraduate programs in library science are designed to prepare students for nonprofessional positions as assistants in large libraries or as librarians of small public or school libraries. A study in the Office of Education shows that in 1952–53 over 500 institutions of higher education in the United States offered library courses with credit toward a first baccalaureate degree. These undergraduate programs, aside from instruction in the use of the library, include (*a*) preparatory courses, usually 8 to 12 semester hours, given by library schools as a foundation for professional study; (*b*) courses for teacher-librarians, usually 6 to 18 semester hours, offered by some teachers colleges and departments of education in other institutions; and (*c*) courses for public and school librarians, ranging from 24 to 30 semester hours, offered by departments of library science in colleges.

These library training courses aim at meeting State requirements for the certification of school and public librarians. Common to all these nonprofessional programs are fundamental courses in bibliographical and reference work, cataloging and classification, book selection, and library adminis tion, useful in all types of libraries.

Professional Curriculums and Degrees

Most accredited library schools offer a curricu on a full graduate level. These graduate progr in library science are designed to prepare quali librarians for positions of professional responsib which require administrative leadership, special knowledge, and educational competence. Such sitions are found in large school, college, univers public, and special libraries. Basic study ar cover (*a*) the functions of the library in society, pa and present; (*b*) the field of communications (pri film, radio, and television) in relation to librari (*c*) the underlying principles and problems of vario types of libraries and library services; (*d*) the liter ture and bibliography of library science; and (*e*) th methods of research applicable to library problem Students are encouraged to broaden their schola ship through advanced courses in library science o academic subjects related to their individua specialties.

Requirements for the master's degree in library science vary in detail among the library schools but conform to a general pattern governing residence credits, grades, foreign languages, theses, and examinations. Residence is commonly required for on academic year plus an extra summer session, quarte or semester. The University of California continue to award a master's degree after 2 years of study i librarianship, a practice formerly followed by seven other institutions. Credit requirements range fro 30 to about 45 semester hours or their equivalen Students are expected to do superior course wor befitting the graduate level. Some institution assume that undergraduate credits imply a readin knowledge of a foreign language, but others insis upon certification by the appropriate languag department. An acceptable master's thesis, essay or report on a library topic is usually required a evidence of ability in research, although additiona course work is sometimes accepted as a substitu for a thesis. Some library schools require candidates for master's degrees to pass comprehensiv examinations, oral or written, or both.

To accommodate students who have acquired bachelor's degree in library science following a yea of postgraduate study, library schools modify the requirements for a master's degree. This usual involves a reduction of residence requirements an academic year (where they are normally longer) and the substitution of electives for required library courses which have been covered previously by the student.

The basic graduate curriculum in librarianship leads to a master's degree. Despite the common elements in the current programs, the master's degree reads variously among the different institutions, such as master of library science, library service, or librarianship; and master of arts, science, or education.

Graduate Study Leading to the Doctorate

Beyond the basic professional program are opportunities for librarians to continue graduate study. Qualified librarians are encouraged to pursue advanced scholarly and professional studies in universities offering a doctorate. The doctorate in library science is intended as recognition for scholarly attainments and ability. The institutions awarding this degree specify that a candidate must possess a master's degree in library science or an acceptable equivalent. At least one university requires professional library experience.

The general requirements for the doctor's degree in librarianship conform to those of the institution's graduate school with respect to residence, foreign languages, major and minor subjects, dissertation, and examinations. As a rule, considerable latitude is permitted in the fulfillment of course requirements, provided that the student concentrates in at least one major area of librarianship, such as school, college, or public library administration, the history of books and libraries, or the library implications of various mediums of communication. The doctorate in librarianship is conferred usually as doctor of philosophy, or as doctor of library science.

Earned doctor's degrees in subject fields other than librarianship are not infrequently found among librarians who have pursued advanced study in library science either as a part of or supplementary to the doctoral program.

Graduate Degrees in Library Science

The widespread replacement of the traditional bachelor's program in library science by curriculums leading to a master's degree or beyond is evident from statistics of earned degrees conferred in the United States between 1947–48 and 1952–53 (table 33). According to reports submitted to the Office of Education, the number of bachelor's degrees conferred in library science declined from 1,611 in 1947–48 to 607 in 1952–53, while the number of master's degrees conferred in that field increased from 124 to 1,035 in the same period. The number of doctor's degrees awarded in library science has always been small, a maximum of 5 in 1947–48 and 3 in 1952–53. Meanwhile, the total number of all degrees conferred in librarianship has fluctuated from 1,740 in 1947–48 to 1,645 in 1952–53.

Table 33.—Earned degrees in library science conferred by institutions of higher education in the United States, 1948–53

Year	All degrees	Bachelor's and first professional	Master's and second professional	Doctor's
1948	1,740	1,611	124	5
1949	1,285	1,019	263	3
1950	1,611	1,057	549	5
1951	1,962	789	1,172	1
1952	1,721	629	1,088	4
1953	1,645	607	1,035	3

Source: Compiled from annual reports of earned degrees made by the Office of Education.

Other Opportunities for Library Education

Besides the basic professional program, there are opportunities for librarians who do not seek advanced degrees to continue their efforts at self-improvement. Practicing librarians may keep informed of new viewpoints and trends in library service through periodic conferences, institutes, and workshops sponsored by library schools, State library agencies, and professional associations.

Correspondence study courses in library science are offered by a few universities. These courses, however, are designed to assist untrained workers in small libraries who are unable to attend a library school. They do not lead to professional degrees in librarianship.

Current Problems in Library Education

The widespread adoption of graduate programs by library schools has solved for alumni and employers some problems concerning adequate professional preparation, advanced degrees, and corresponding salary status, but it has left other problems unsolved. Among these is the fact that not all library administrators and governing boards have recognized fully the distinction between the educational requirements for nonprofessional library workers and those for professional librarians when it comes to employment. Closer agreement among librarians upon the areas of knowledge to be included in a common core of library education is also needed. Another problem involves the establishment and maintenance of library schools in higher educational institutions which do not have intellectual and financial resources adequate to support a strong professional program of library education and research.

The perpetual problem faced by library schools is the recruiting of public-spirited young men and women willing and able to make librarianship a career. The current programs of library education reflect the demands of society upon the librarian as a person of culture, scholarship, and administrative capacity. The selection and preparation of socially minded and technically competent librarians, qualified for educational leadership in the community, is a joint responsibility of library educators, practicing librarians, and university authorities.

Graduate Library Schools and Enrollments

Under the current pattern, graduate degrees in library science are offered by at least 45 institutions of higher education. The library schools which have been accredited by the American Library Association, as of December 1, 1953, are designated by an asterisk (*). The number following the name of the library school indicates the enrollment of students for the fall term of 1953 as reported to the Office of Education.

Alabama
- University of Alabama, Department of School Library Service, 25

California
- Immaculate Heart College, Department of Library Science, 16
- University of California, School of Librarianship,* 97
- University of Southern California, School of Library Science,* 71

Colorado
- University of Denver, School of Librarianship,* 53

District of Columbia
- Catholic University of America, Department of Library Science,* 157

Florida
- Florida State University, Library School,* 80

Georgia
- Atlanta University, School of Library Service,* 38
- Emory University, Division of Librarianship,* 21

Illinois
- Rosary College, Department of Library Science,* 56
- University of Chicago, Graduate Library School,* 56
- University of Illinois, Library School,* 106

Indiana
- Indiana University, Division of Library Science,* 61

Kansas
- Kansas State Teachers College of Emporia, Department brary Science,* 11

Kentucky
- University of Kentucky, Department of Library Science,

Louisiana
- Louisiana State University and Agricultural and Mec College, Library School,* 49

Massachusetts
- Simmons College, School of Library Science,* 150

Michigan
- University of Michigan, Department of Library Science,*
- Wayne University, Department of Library Science, 69
- Western Michigan College of Education, Department of brarianship,* 41

Minnesota
- College of St. Catherine, Library School,* 21
- University of Minnesota, Library School,* 87

New York
- Columbia University, School of Library Service,* 349
- New York College for Teachers at Albany, Department of brarianship,* 18
- Pratt Institute, Library School,* 28
- St. John's University, Department of Library Science, 53
- State University Teachers College at Geneseo, Departme Library Education,* 127
- Syracuse University, School of Library Science,* 69

North Carolina
- Appalachian State Teachers College, Department of Lib Science, 30
- North Carolina College at Durham, School of Library Scienc
- University of North Carolina, School of Library Science,* 2

Ohio
- Kent State University, Department of Library Science, 34
- Western Reserve University, School of Library Science,* 7

Oklahoma
- University of Oklahoma, School of Library Science,* 38

Oregon
- University of Portland, School of Library Service, 27

Pennsylvania
- Carnegie Institute of Technology, Carnegie Library School,
- Drexel Institute of Technology, School of Library Science,
- Marywood College, Department of Librarianship,* 21

Tennessee
- George Peabody College for Teachers, Library School,* 37

Texas
- East Texas State Teachers College, Department of Lib Science, 10
- Our Lady of the Lake College, School of Library Science,* 2
- Texas State College for Women, Department of Library ence,* 55
- University of Texas, Graduate School of Library Science,*

WASHINGTON

University of Washington, School of Librarianship,* 56

WISCONSIN

University of Wisconsin, Library School,* 48

Total enrollment: 2,712

Men, 657

Women, 2,055

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16. Medical Education

By DONALD G. ANDERSON, M. D.*

DISCOVERIES AND ADVANCES in medical knowledge benefit society only if there is available a large force of well-trained physicians capable of applying such discoveries with intelligence and discrimination to the health problems of the individual patient and those of the community. High standards of medical education are basic to a high quality of medical practice. During the last 50 years the health record of the American people has improved at a rate that has not been approached by any other large nation in history. In this period life expectancy at birth in the United States has increased from 49 years to more than 68 years. This increase exceeds the total gain in the average span of life from the date of the first scientific mortality table in 1691 to the beginning of the present century. This achievement and the many other unprecedented improvements inscribed in the health records of the American people are in a large measure the direct result of the advances in medical education that have been made during the same period.

The Medical Profession

The medical profession and its service have undergone dramatic changes in the United States, particularly during the first half of the 20th century. At the beginning of the century the typical physician's effective armamentarium was a limited one. Most of his drugs and instruments could be carried in the traditional black bag. Medical care even for serious illness was provided largely in patients' homes. The comparatively few hospitals in existence were designed primarily for the care of the indigent sick. At the turn of the century, only the first steps had been taken toward placing the practice of medicine on a sound scientific basis.

Within the last 50 years the scientific knowledge,
technical and physical facilities available to p
cians in their work have attained amazing pro
tions. Care of the sick has become increasi
centered in hospitals; a large corps of skilled t
nicians and auxiliary medical workers has evo
to assist physicians; and numerous "miracle dr
have been developed for therapeutic purposes.
horizons of medical care have been greatly expan
not only to include the diagnosis and treatmen
disease but also to encompass such objectives as
promotion of health, the prevention of disease,
the rehabilitation of those who have been inju
by disease and accident. Recently there has b
increasing emphasis on chronic illness, mental hea
and the health of the older population. These
developments are making large demands of
medical profession, and they help to determine
form and character of the medical education wh
the colleges and universities must provide.

There were 214,667 physicians in contine
United States at the close of the year 1952. Pr
ably about 90 percent were in active pract
During the year 1952 the number of physici
increased by about 3,000. The rate of increase
physicians is about the same as the rate of incre
of the population. Currently there are about
physicians per 100,000 population.

The majority of physicians are general p
titioners; they constitute the backbone of Ameri
medicine. In recent years there has been a mar
trend toward specialization in medical practice
the result that at present almost one-third of
physicians limit their practice to one field. It
estimated that over half or those now complet
medical school enter specialty training progra
More than 20 major fields of specialization are
ognized, such as internal medicine, surgery, obst
rics and gynecology, ophthalmology, psychiat
neurology, and pediatrics.

A number of physicians teach in the medi schools, and others carry on research, engage in public health work, or carry on the work of professional organizations and associations. A sizable number of physicians are in the service of the Federal Government, both in civilian agencies and in the Armed Forces. The great demand for physicians in other fields than those rendering service to patients and the increasing demand for more and better medical service have created concern that the Nation should train more physicians.

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To increase the supply of physicians will require an expansion of the facilities for medical education. Medical educators are of the definite opinion that to increase enrollments with present faculties and facilities would lower the quality of medical education and eventually the quality of medical care. Although gradual, a continuing increase in the facilities for medical education has been in progress especially since the end of World War II, and there is every indication that it will continue. Thus it has been conservatively estimated that the annual number of graduates from the medical schools will increase by 30 percent between 1950 and 1960. This is being accomplished by the expansion of existing medical schools and the establishment of new medical schools. The number of the latter is limited by the great initial cost and by the long period of preparation and planning required. Four years is not an unusual interval between the date that a definite decision is reached to establish a new school and the date the first students are enrolled.

Professional Organizations and Publications

The principal professional organization of physicians is the American Medical Association founded in 1847. It is composed of constituent State and Territorial medical associations which in turn consist of component county and district medical societies. More than 130,000 physicians make up the association. The House of Delegates, which meets semiannually is the policy-making body of the association. Headquarters are maintained at 535 North Dearborn Street, Chicago, Ill., where a staff of about 900 employees carries on the work of the various councils, committees, bureaus, and departments. The income of the association in 1951 was somewhat more than $9 million.

The association has, since 1883, published the weekly *Journal of the American Medical Association*, one of the outstanding professional journals of the world. Other publications include nine monthly special journals, the *American Medical Directory*, the quarterly *Index Medicus*, the *Standard Nomenclature of Diseases and Operations*, *New and Nonofficial Remedies*, and *Today's Health*, a monthly magazine for the public.

Many other organizations are found in medicine, such as the American College of Surgeons, the American College of Physicians, the American Academy of General Practice, the American Public Health Association, and the Academy of Pediatrics. Many of these societies publish their own journals.

Licensure of Physicians

The licensure of physicians in America had its origin in several of the colonies before the American Revolution. After the Revolution some States empowered medical societies and medical schools to license physicians. About 1835 legislation began to appear which placed the function of licensure under State boards, usually appointed by the Governors of the States, but by the time of the Civil War most of the licensing laws had been repealed. By the 1870's, however, the States had begun to create boards of medical examiners, and by 1895 practically all had established some kind of administrative organization to examine and license physicians.

Each State has its own licensure requirements and procedures. A physician moving from one State to another is required to obtain a license in the State to which he moves. Many States, through reciprocity arrangements, grant licenses to such physicians provided the requirements of the first State are high.

The State examining boards in 1912 organized the Federation of State Medical Boards of the United States, which was formed by the union of two earlier federations. Its annual meetings, held in Chicago in February, are devoted largely to discussions of medical licensure and education. A subject of much interest over the years has been State reciprocity in medical licensure. The federation also has taken great interest in the National Board of Medical Examiners. It publishes a monthly periodical—the *Federation Bulletin*.

National Board of Medical Examiners

In order to provide a qualifying examination on a national scale in medicine, the National Board of Medical Examiners was established in 1915. This unofficial board is made up of 38 persons representing the Federal services, the Federation of State Medical Boards of the United States, the Association of American Medical Colleges, the Council on Medical Education and Hospitals of the American Medical

Association, and a number of members elected at large.

Several times a year the board prepares and administers examinations to which are admitted students and graduates of approved schools in the United States and Canada. Graduates of foreign medical schools are admitted if they meet the board's eligibility requirements for foreign-trained physicians. The examinations are given in three parts. Students who pass the examinations are known as "diplomates" and are given certificates. These certificates are accepted in lieu of their own examinations by the licensing boards in all of the States except Arkansas, Florida, Georgia, Indiana, Louisiana, Nebraska, North Carolina, South Carolina, and Texas. They are also recognized by the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Canal Zone. Additional oral examinations are required by some State licensing boards and by some State boards of examiners in the basic sciences.

Certification of Specialists

There is need for careful evaluation of the qualifications of specialists so that the medical profession, hospitals, and the public can easily differentiate the well-trained competent specialists from those not so qualified. This is accomplished through certification by nationally organized specialty boards rather than through licensure. The first of these boards, which came to be known as the American Board of Ophthalmology, was incorporated in 1917. A total of 19 specialty boards are in existence.

A specialty board establishes minimum educational and training standards in the specialty, determines whether candidates for certification in the specialty have received adequate preparation as defined by the board, provides comprehensive examinations to determine the ability and fitness of such candidates, and certifies to the competence of those physicians who have satisfied the requirements of the board. The certificate of a board does not confer on any person legal qualifications, privileges, or a license to practice medicine or a specialty. The specialist, regardless of his certification, is legally required to hold a license to practice, just as any other physician. Through establishing and maintaining high standards, a specialty board assists in improving the quality of graduate education in that field.

In recent years the numbers of new specialists certified by the specialty boards have been: 1950, 3,827; 1951, 4,552; 1952, 4,118; and 1953, 4,022.

The Advisory Board for Medical Specialties was formed in 1934 to coordinate the activities of the medical specialty boards. It is composed of representatives of the specialty boards and several other societies and organizations.

Evolution of Medical Education

Medical education in the colonies of America was acquired by the student from a practitioner who, as his preceptor, taught him the knowledge and art of medicine. As the shortcomings of this simple system of education became recognized, the idea of the medical school was introduced, and four such schools were established before 1800, all of them associated with colleges or universities.

The increasing demand for physicians led medical practitioners to establish medical schools in the early 19th century, and soon privately owned schools of medicine became numerous. Many of these were commercial enterprises. The number of medical schools reached the peak in 1904, when there were 160 in existence. With a few exceptions, State universities did little with medical education until the beginning of the 20th century.

During the last quarter of the 19th century a few medical schools pioneered in establishing standards comparable to those prevailing in other fields of graduate and professional education. One or more years of college work were made a prerequisite for admission; a nucleus of full-time teachers was employed; well-equipped laboratories for teaching and research were established; bedside instruction was introduced; and the three largely repetitive sessions of 6 months each were replaced by a 4-year graded curriculum. Except for adopting the 4-year curriculum, the majority of the medical schools did not participate in these advances until after 1905.

As late as the first decade of the present century, most of the American medical schools had staffs that were inadequate both in numbers and in quality, possessed only meager physical facilities, and conformed to practically no standards. Only a handful offered an educational program that could be considered adequate in terms of the type of training now generally provided. Of the remainder, many were proprietary institutions operated for the profit of their promoters or faculties. Others were outright diploma mills. Standards for admission were practically nonexistent. Even a high-school education was often not required.

The early decades of the 20th century marked a turning point in medical education. The American Medical Association, through its Council on Medical Education established in 1904, undertook vigorous measures to improve the education of physicians. Some of the medical schools began to receive large private gifts, and others received increased funds from public appropriations. The survey of medical education reported in 1910 (described later) gave powerful impetus to reform, and the succeeding decade marked the widespread establishment of medical education as a university discipline with acceptable educational standards.

The rising standards of medical education and the increasing costs resulting therefrom made it impossible to conduct medical schools for profit. Consequently many of the schools closed. Of the schools that continued, some merged and most of them secured college or university connections. All became nonprofit institutions. After 1905 the number decreased sharply, and by 1929 there were only 76 in the United States. Although several new schools were established during the period from 1910 to the end of World War II, the major effort in these years was directed at strengthening existing schools rather than creating new ones.

Large sums of money became available to build modern, well-equipped laboratories and teaching hospitals and to provide endowments for the support of the large number of faculty members required for satisfactory instruction. Foundations, individual philanthropists, and State legislatures provided generous support. The result has been a most remarkable development of medical education in the United States.

Accreditation

The national accrediting agencies in the field of medical education are the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges.

The Council on Medical Education was established by the American Medical Association in 1904. In 1905 it adopted an ideal standard for the medical schools and published its first classification of the schools based upon the performance of graduates in licensing examinations. Three years later the council, in its efforts to improve medical education, sought the cooperation of the Carnegie Foundation for the Advancement of Teaching, which resulted in the famous study of medical education from 1908 to 1910, described later. Following this study the council adopted and enforced specific standards for medical education, which resulted in the closing of large numbers of the poor medical schools.

Prior to 1929 the council classified the medical schools as A, B, and C, but later it gave up classification and reported schools as "approved." The names of unapproved schools were not reported.

The Council on Medical Education in 1912 began a survey of hospitals offering internships, and in 1914 it published its first list of hospitals approved for intern training. Soon the council interested itself in graduate medical education in preparation for the practice of the specialties, and in 1913 and 1919 it surveyed graduate schools and graduate medical education. Further efforts toward improving preparation for the specialities resulted in the adoption in 1923 of standards for specialty training and in the publication in 1927 of lists of hospitals approved for residency training in the various specialties. In 1933 the council began to approve specialty examining boards in the specialties of which there are now 19.

In its early years the Council on Medical Education initiated and sponsored an annual Congress on Medical Education and Licensure, which is now held under the joint auspices of the council and the Federation of State Medical Boards. This significant meeting is held in Chicago in February.

The medical profession requires the services of a considerable group of nonmedical individuals especially trained in fields ancillary to medicine, such as medical technology, physical therapy, and occupational therapy. Upon request, the council has cooperated with national organizations in some of these fields in accrediting educational programs for preparing such personnel.

The Council on Medical Education originally consisted of 5 members; the number was increased to 7 in 1925 and to 10 in 1952. All the members are elected by the house of delegates of the American Medical Association. The name was changed in 1920 to the Council on Medical Education and Hospitals. The annual budget of the council is almost $375,000. The full-time professional personnel of the staff totals 15.

Educational Association

The earliest educational organization in medicine was the Association of American Medical Colleges, which was established in 1890. For some years after its formation the association had no regular membership, and its annual meetings were open to any medical college that sent delegates. Very early, however, medical school standards were formulated and schools were required to adhere to them in order to hold membership in the association. These standards pertained to such matters as admission requirements, physical equipment, and adherence to a standardized medical schedule. Eventually inspections were begun of colleges making application for membership. In 1903 reinspections of all member colleges were begun and have been continued ever since. The association has wielded great influence in the formulation and enforcement of entrance requirements, the development of a well-balanced curriculum, and the promotion of improved methods of teaching. In these efforts it has collaborated with the Council on Medical Education and Hospitals of the American Medical Association.

The association holds an annual meeting, and it carries on a number of activities, including various studies pertaining to medical education. It publishes the monthly *Journal of Medical Education* begun in 1925 as the *Journal of the Association of American Medical Colleges*. Headquarters of the association are maintained at 185 North Wabash Avenue, Chicago, Ill. The annual budget is in the neighborhood of a quarter of a million dollars.

The Association of American Medical Colleges and the Board of Trustees of the American Medical Association in 1942 established an official liaison committee with representation from the college association and the Council on Medical Education and Hospitals. This committee holds regular meetings to discuss problems of common concern. The members take back to their organizations the recommendations arising from the deliberations.

Collaboration between the two organizations is further illustrated by the fact that inspections of medical schools are conducted jointly by representatives of both. Important action pertaining to medical education is taken by either organization only after discussion and concurrence with the other. Thus the two organizations present a solid front on all issues; together they exert a profound influence on medical education in the United States.

Surveys and Studies

The efforts to improve medical education have been greatly aided by several significant national surveys. The first of these was related to the work of the Council on Medical Education of the American Medical Association. It was carried out from 1908 to 1910 by Abraham Flexner for the Carne Foundation for the Advancement of Teachi Mr. Flexner, accompanied by N. P. Colwell, first secretary of the council, inspected ev medical school in the Nation. The result published by the foundation in 1910 as *Med Education in the United States and Canada, A Re to the Carnegie Foundation for the Advancemen Teaching*. (Bulletin No. 4). The well-documen report of the low state of many medical scho was widely publicized, and it impressed both public and the profession with the need for refo The candid and drastic criticism of the shortcomi of medical education was very effective in promo better medical education.

The second survey of medical education carried on by the Commission on Medical Educati organized in 1925 by the Association of Ameri Medical Colleges. This survey, directed by Will C. Rappleye, was set up to study the educatio principles of medical education and licensure. T hope was that the "study would assist the efforts develop a program adapted peculiarly to the ed cational, economic, and social conditions in th country." The *Final Report of the Commission Medical Education* was published by the commis in 1932.

The third study was made for the Council Medical Education and Hospitals of the Americ Medical Association by Herman G. Weiskott beginning in 1934. During the economic depr sion of the 1930's, there was a tendency to relax high standards of medical education. It seem desirable therefore [illegible] resurvey the medical scho of the United Stat[illegible] and Canada and to indicate the public which schools were advancing and whi were lagging. A total of 81 medical schools we visited and examined. A report on the objecti and policies, organization and administration, fac ties, teaching personnel, and educational progra was published in 1940 by the American Medi Association under the title *Medical Education in United States, 1934–39*.

The fourth study, known as the Survey of Medi Education, was organized in 1947 under the jo sponsorship of the Council on Medical Educati and Hospitals and the Association of Americ Medical Colleges. Carried on under a committ of seven persons, the survey was directed by John Deitrick. Forty-one of the medical schools we visited and studied in detail. The survey conc trated first on studying the range of activities in which a medical school engaged; second, on examining the responsibilities that were being undertaken by the medical schools; and third, on presenting some of the more important problems created for the medical schools by the assumption of these activities and responsibilities. The report was published in 1953 as *Medical Schools in the United States at Mid-Century* (New York, McGraw-Hill Book Co., Inc.). The project also included a study of premedical education by a special subcommittee of which Aura E. Severinghaus was chairman. The findings were published in 1953 in a volume titled *Preparation for Medical Education in the Liberal Arts College* (New York, McGraw-Hill Book Co., Inc.).

Medical education beyond that required to obtain the first professional degree has been the subject of several inquiries. The Council on Medical Education made a survey of graduate schools and graduate education in 1913–15 and a later one in 1919. Another was undertaken in 1937 by the council. It resulted in a report which was published by the association in 1940 under the title *Graduate Medical Education in the United States: I—Continuation Study for Practicing Physicians, 1937 to 1940.* The report dealt largely with short courses for practicing physicians.

Another of these investigations was conducted by the Commission on Graduate Medical Education, which was created in 1937 by the Advisory Board for Medical Specialties. The work was directed by Robin C. Buerki, and the report was published by the commission in 1940 as *Graduate Medical Education.* The objective was to stimulate greater interest in improving the educational content of the internship and the residency. The report dealt also with short courses and with the specialty boards and their work.

Currently the Council on Medical Education and Hospitals is completing an intensive study of postgraduate medical education with emphasis on an analysis of continuation and refresher courses. Publication of a comprehensive report is planned for late 1954 or early 1955.

Schools and Enrollments[1]

Medical education in the United States is provided by 76 medical schools and 6 schools of the basic medical sciences which offer the first 2 years of the 4-year medical curriculum. Several of the medical schools are new and do not yet offer 4 years of work. The schools are situated in 38 States, the District of Columbia, and Puerto Rico.

Plans have been initiated to construct a new medical school in New York City as a part of Yeshiva University. The University of Florida is also developing a medical school. Several other States have been considering the establishment of medical schools but have not yet taken definite action. Three States—Maine, New Hampshire, and Vermont—have enacted legislation for participation in a New England regional higher education plan which would include a medical school, if such a plan is established.

Seventy-one of the medical schools are integral departments of universities; the other 11 are independent institutions without university affiliation; 42 of the schools are controlled by private nonprofit corporations, 37 are State owned, and 3 are municipal institutions. For some time there have been no proprietary medical schools or schools otherwise operated for profit. Over the years, approximately 60 percent of the students and graduates have been in privately controlled institutions and 40 percent in publicly controlled institutions.

The number of medical schools, students, and graduates in the United States in stated years since 1905 are shown in table 34. The number of students enrolled in the 4-year schools in 1953–54 ranged from 181 to 750, the average being 381. Of the 28,227 students in approved medical and basic science schools in 1953–54, 1,502—5.3 percent—were women. Two of the schools enrolled no women, one enrolled no men.

Two medical schools are maintained primarily for Negro students. The one at Howard University in 1952–53 enrolled 265 Negroes, and Meharry Medical College enrolled 259. The other 191 Negro students were found in 47 schools.

Only a limited number of foreign students are enrolled in medical schools of the United States. In 1953–54 there were 13 from Canada and 101 from other foreign countries. During the same year the 12 medical schools in Canada enrolled 74 students from the United States.

In recent years a considerable number of American students have enrolled in foreign medical schools other than in Canada. For 1952–53, a total of 72 such schools in 22 countries reported 1,734 American students, of whom 579 were from Puerto Rico. Most of these students were in Switzerland, Spain (mostly from Puerto Rico), Italy, and Mexico (mostly from Puerto Rico). Students from the States who atte medical schools in foreign countries, other than Canada, frequently experience difficulty in obtaini licenses to practice medicine in the States because the great differences in medical education in United States and those countries.

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[1] Detailed statistics and information on medical schools, students, and graduates are published annually in the educational number of the *Journal of the American Medical Association*, usually in September. Additional information presented periodically in the *Journal of Medical Education.*

Table 34.—Medical schools, students, and graduates in approved medical schools in the United States, 1905–54

[Students in the schools of the basic medical sciences are included; students in the required intern year and graduate students are not included]

Year	Schools	Students	Graduates
1905	160	26, 147	5, 606
1910	131	21, 526	4, 440
1915	96	14, 891	3, 536
1920	85	13, 798	3, 047
1921	83	14, 466	3, 186
1922	81	15, 635	2, 529
1923	80	16, 960	3, 120
1924	79	17, 728	3, 562
1925	80	18, 200	3, 974
1926	79	18, 840	3, 962
1927	80	19, 662	4, 035
1928	80	20, 545	4, 262
1929	76	20, 878	4, 446
1930	76	21, 597	4, 565
1931	76	21, 982	4, 735
1932	76	22, 135	4, 936
1933	77	22, 466	4, 895
1934	77	22, 799	5, 035
1935	77	22, 888	5, 101
1936	77	22, 564	5, 183
1937	77	22, 095	5, 377
1938	77	21, 587	5, 194
1939	77	21, 302	5, 089
1940	77	21, 271	5, 097
1941	77	21, 379	5, 275
1942	77	22, 031	5, 163
1943	76	22, 631	5, 223
1944	77	23, 529	5, 134
1944 (2d session)	77	24, 666	5, 169
1945	77	24, 028	5, 136
1946	77	23, 215	5, 826
1947	77	23, 900	6, 389
1948	77	22, 739	5, 543
1949	78	23, 670	5, 094
1950	79	25, 103	5, 553
1951	79	26, 186	6, 135
1952	79	27, 072	6, 080
1953	[1] 79	27, 688	6, 668
1954	[2] 80	28, 227	6, 861

[1] Not including the medical schools of the University of California at Los Angeles, the University of Miami, and the University of Puerto Rico, which did not enroll students in all 4 years of the medical curriculum.

[2] Not including the medical schools of the University of California at Los Angeles and the University of Miami, which did not enroll students in all 4 years of the medical curriculum.

Source: *Journal of the American Medical Association*, vol. 153, p. 119 (Sept. 12 1953); vol. 156, p. 149 (Sept. 11, 1954).

There is keen competition for admission to medic school. Beginning in the 1920's the number applicants began to exceed the number of places the freshman classes of the medical schools. J before World War II there were approximately t applicants for each available place. With the lar backlog of veterans after World War II, the rat of applicants to places rose to 3.5 to 1. Since 194 there has been a decrease each year in the number applicants with a return to the prewar ratio approximately two applicants for each availab place.

The public has been convinced that admission t medical school is very difficult, which has discouraged able students from applying. An apparent result is that there has been a sharp decrease in the numbe of applicants with superior academic records. One can only speculate on the cause, but it seems likely that some of this drop is due to increasing competition for superior talent from other professional fields

The high standard demanded of applicants has been exaggerated. In 1953 about one-half of the applicants actually gained admission to medical school. State-supported medical schools have in the main limited their students to residents of their respective States. In 1952–53, 14 medical schools excluded all out-of-State students, and 5 others admitted fewer than 5. Consequently, students of mediocre standing in college and of low test performance are being admitted to some medical schools. Indeed, some of the schools are "scraping the bottom of the barrel" of their applicants in order to fill their classes. This situation causes much concern among medical educators.

Premedical Education

The Council on Medical Education in 1914 established 1 year of college education as the minimum academic requirement for admission to approved medical schools. In 1918 this requirement was raised to 2 years. Beginning in 1938 the council recommended but did not require that at least 3 years of college work be required of all candidates for admission. This amount of college work became mandatory for students entering medical school after January 1953. Although the present minimum trated first on studying the range of activities in which a medical school engaged; second, on examining the responsibilities that were being undertaken by the medical schools; and third, on presenting some of the more important problems created for the medical schools by the assumption of these activities and responsibilities. The report was published in 1953 as *Medical Schools in the United States at Mid-Century* (New York, McGraw-Hill Book Co., Inc.). The project also included a study of premedical education by a special subcommittee of which Aura E. Severinghaus was chairman. The findings were published in 1953 in a volume titled *Preparation for Medical Education in the Liberal Arts College* (New York, McGraw-Hill Book Co., Inc.).

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In recent years a considerable number of American students have enrolled in foreign medical schools other than in Canada. For 1952–53, a total of 72 such schools in 22 countries reported 1,734 American requirement is 3 years, the council recommends that, in order to acquire a broad general education, premedical students take the full 4-year college course. By the fall of 1954, 9 approved medical schools had established 4 years of college work or a college degree as their minimum academic admission requirement.

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[1] Detailed statistics and information on medical schools, students, and graduates are published annually in the educational number of the *Journal of the American Medical Association*, usually in September. Additional information presented periodically in the *Journal of Medical Education.*

Statistics for the freshman class that entered the medical schools during the academic year 1953–54 reveal that 70 percent had bachelor's degrees. In recent years there has been a rapid increase in the proportion of applicants admitted who had received college degrees.

Candidates for admission to medical schools must meet certain subject-matter requirements, which include as a minimum the completion of a satisfactory college course in English, physics, biology, inorganic chemistry, and organic chemistry. The science courses must include both theoretic and laboratory work. Some medical schools have additional specific requirements in scientific and nonscientific subjects. In recent years a number of medical schools have recognized that the tendency of premedical students to take a preponderance of scientific courses in college has been carried to undesirable limits, and they have eliminated such additional requirements in an effort to encourage prospective students of medicine to acquire a broad general education. Practically all schools advise students not to pursue courses in college that will be required in medical school.

For some years tests have been devised and used to determine the scholastic aptitude of those who applied for admission to medical schools. The first of these—the Moss Medical Aptitude Test—was discarded in 1946 in favor of a new Professional Aptitude Test, which gave way in 1948 to the Medical College Admission Test. This test is prepared and administered by the Educational Testing Service under the sponsorship of the Association of American Medical Colleges. It is given twice a year at about 275 designated centers. Most medical schools require their applicants to take the test; others strongly recommend it. The schools use the test scores as one factor in selecting the applicants they admit. During the year 1952–53 a total of 11,982 persons took the test.

Undergraduate Curriculum

Undergraduate medical education has several important objectives. The primary one is to make certain that all students granted the degree of doctor of medicine have acquired the fundamental knowledge and habits of work essential for the safe and intelligent practice of medicine.

Medical education also seeks to develop the student's interest in the unknown and to acquaint him sufficiently with the principles of scientific investigation so that he is prepared to judge critically the many scientific papers and discussions to which he must devote his attention as long as he remains active in medicine. By inculcating on the student the spirit and principles of scientific investigation, the schools have the further objective of increasing the possibility that the student will in time himself contribute to the advance of medical knowledge either through investigations at the bedside or in the laboratory.

The basic medical school course required by all medical schools is 4 years in length. One school requires in addition that its students serve a year of internship before the degree is granted. This is not an important distinction since more than 99 percent of the graduates of all schools take at least 1 year of internship after graduation.

The first 2 years of the medical school course are devoted largely to study in the laboratory of the basic or preclinical sciences including anatomy, physiology, biochemistry, pathology, pharmacology, and bacteriology. During this period the student is expected to master both principles and detailed knowledge of the normal structure and function of the human body, the causative agents of disease, and the changes in structure and function that are the result of disease. He is also introduced to methods and agents for the prevention and treatment of disease.

The last 2 years of the medical school course are devoted to clinical subjects, including medicine, surgery, pediatrics, psychiatry, obstetrics, public health, and the various medical and surgical specialties. Except for 1 or 2 lectures a day, the student's time is spent in hospitals and outpatient departments working with patients under supervision. During this time he learns to take case histories, perform examinations, and recognize the various manifestations of disease. He is required to become familiar with the course of all important diseases, their complications, and sequelae and to observe and become familiar with their treatment.

In the last 25 years great advances have been made in applying the methods and knowledge developed in the preclinical sciences to the problems of clinical medicine. As a result of this development and the contributions of psychiatry, which have reemphasized the importance of considering every patient as a whole and not in terms of isolated organs or diseases, an increasing effort is being made in most schools to effect more correlation and integration between the various courses that are given during the 4 undergraduate years. This has resulted in an increasing interplay among departments in the conduct of courses. Likewise, it has led to the introduction of preliminary instruction in clinical subjects into the first 2 years of the medical school course and an extension of instruction in the preclinical sciences into the last 2 years.

While the emphasis placed on different subjects varies somewhat from school to school, the general plan of medical education in all schools follows a fairly basic pattern. Thus, while one school may stimulate more interest in research, teaching, or the practice of a specialty and another school more interest in the general practice of medicine, the curriculums of all schools are sufficiently uniform so that the graduates of no school are limited by their training as to the type of future career they may elect to pursue.

Upon completion of medical-school course, the student is awarded the degree of doctor of medicine (M. D.).

Internship and Residency

Although 24 States still permit a physician to be licensed immediately upon graduation from medical school, it is generally recognized that before a physician is adequately prepared to assume the responsibilities involved in the practice of medicine he should have at least 1 year of hospital training after graduation from medical school. Consequently, almost without exception, graduates who plan to practice first take 1 year or more of internship training in 1 of the hospitals approved for such training. During the internship the physician follows intimately the course of several hundred patients with a wide variety of diseases. Under the close supervision and instruction of senior physicians, he is allowed to take progressively more responsibility in the care of patients. Thus while increasing his knowledge, he develops confidence born of experience in his ability to diagnose and treat patients.

If a physician intends to specialize, he must take 2 to 4 years of additional hospital training as a resident after completing his internship provided he wishes to qualify for certification by one of t American boards in the specialties.

Hospital internship and residency programs a approved by the Council on Medical Educati and Hospitals.[3] Such programs are required meet certain standards. For the year 1953, a to of 856 hospitals were approved for internshi these hospitals offered 11,006 internship appoi ments, but only about 72 percent of the places w filled. The 4,634 approved residency progra conducted in 1,131 hospitals in 1953 made availab 22,292 residency positions, but only 76 percent of t positions were filled. The approved residen programs were in general practice and 27 specialti and subspecialties.

Graduate Education Leading to Advanced Degree

Many physicians engage in graduate study generally as fellows, in medical schools and hospita laboratories. Men who are interested in careers i research or teaching usually take such training, b some who intend to practice medicine also take a least 1 year of fellowship training. Graduate wor of this type may or may not lead to an advance degree.

A total of 31 medical schools in the United State offer persons holding the doctor of medicine degre the opportunity to earn advanced academic degree in one or more clinical fields. Most medical schoo provide graduate work in the preclinical basi sciences. The numbers of graduate students i medical schools in the United States in recent year are shown in table 35.

Table 35.—Graduate students working for advanced degrees b medical school departments, 1947–54

Year	Graduates of medical schools	Other graduate students	Total
1947–48	813	1,090	1,90
1948–49	1,133	1,765	2,[illegible]
1949–50	1,125	2,094	3,21
1950–51	1,561	2,720	4,28
1951–52	1,905	2,310	4,21
1952–53	1,419	2,285	3,70
1953–54	1,620	2,293	3,91

Source: *Journal of the American Medical Association*, vol. 153, p. 123 (Sept. 1 1953); vol. 156; p. 159 (Sept. 11, 1954).

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[3] One number of the *Journal of the American Medical Association* each year b devoted to approved internships and residencies. It also includes considerabl information on the specialty boards and their requirements.

There are in the United States two separate schools for the advanced study of medicine, the Graduate School of Medicine of the University of Pennsylvania and the Postgraduate Medical School of New York University.

Continuation Education

A physician's education is not completed when he has finished his hospital training; it is a continuing process to which he must devote himself as long as he practices. Advances in medicine occur so rapidly that the physician who does not keep abreast of progress in medical science becomes incapable, within a few years, of properly treating the majority of his patients. Postgraduate and continuation courses of a few days' to several months' duration provide instruction in a wide variety of fields in clinical medicine and the basic sciences. Clinical conferences, graduate assemblies, circuit courses, and seminars provide additional opportunities for physicians. Each year more than one-third of the physicians of the country enroll in one or another type of these courses, which are offered by medical schools, hospitals, medical societies and associations, special societies, State health departments, and Government agencies.

In addition to attending such courses, physicians continue their education by the regular reading of medical journals, more than 500 of which are published in the United States. They also participate in weekly or monthly hospital staff conferences and attend the local, State, or national meetings of one or more of the 200-odd scientific societies and organizations in the field of medicine.

Research

Medicine is forced to deal so largely with the unknown, and consequently with attempts to penetrate the unknown, that a good teacher of medicine must be actively interested in medical research if his teaching is to be vital and stimulating. Recognition of this principle has led in this country to the inseparable combination of teaching and medical research. Thus the faculties of the medical schools and the staffs of their affiliated hospitals constitute the country's most fruitful source for advances in the understanding and control of disease.

Research is today listed among the important activities of every medical school. In some institutions research programs greatly exceed the undergraduate teaching program in the demands that they make on the staff and facilities of the institution. The contribution of such schools must be measured in terms not only of the importance of the investigations in progress but also of the number of investigators and teachers they train for positions of leadership in other institutions throughout the country.

Community Service

In many regions and communities the medical schools with faculties of highly trained experts, well-equipped laboratories, and teaching hospitals possess the outstanding medical personnel and facilities in the entire area. As a consequence, such schools are looked to for guidance and active participation in community and regional health programs. Almost every major new program in the field of health and medical care proposed in recent years has been planned to center in medical schools. Thus medical schools are being called on to sponsor and participate in regional and community plans for hospital organization, for postgraduate and graduate training, for public health activities, for coordinated research, for laboratory services, and for the development of special clinics for the control and treatment of cancer, tuberculosis, psychiatric disorders, and other conditions of importance to the public health.

It is proper and desirable that medical schools should undertake to make some direct contribution to the community or region in which they are located. It must be recognized, however, that the assumption by the medical schools of responsibility for community service is accompanied by certain dangers. Unless the resources of the schools can be increased, their limited staffs and facilities may be diverted too widely from their primary task of education and research. These are functions which the schools alone can perform and which in the long run will contribute more to the improvement of health and medical care than any number of specific service programs in which a school may participate.

Present and Future Problems

Despite the advances that have been made in medical education, the medical schools have never been without problems. Nor does it appear likely that medical educators will ever be satisfied with either the progress or the product of medical education.

Supply of physicians.—Shortly after World War II, when many physicians were still in military service or were completing their hospital training which had been interrupted by the war, a number of extreme predictions of anticipated shortages of physicians were published. These claims have not so far been borne out by experience.

There are good reasons, however, for believing that the country could use more physicians. The problem facing the medical schools is to determine first what the reasonable needs of the country for physicians are, and second how they can accommodate additional students without lowering the quality of their instructional programs or their graduates. The problem is being met in what would appear to be the only practical way. The medical schools are accepting the maximum number of students for which they have facilities, and, where expansion is feasible, they are seeking additional support to provide enlarged facilities. New medical schools are being developed in a number of areas which are capable of but have not been providing facilities for medical education. In this manner a progressive increase in the number of medical graduates is being achieved without the deterioration in the quality of medical education that would have been inevitable if the schools had attempted to increase enrollments abruptly.

Unlike some subjects, medicine does not lend itself to the type of expansion that can be accomplished by putting additional chairs in the back of the classroom and asking the instructor to speak a little louder. Before accepting additional students, a medical school must secure additional laboratory space and equipment, hospital facilities, and trained teachers. Experience has demonstrated that the time required for the intelligent planning and execution of such developments is measured in years and not in weeks or months.

In addition to the expansion of existing schools that is taking place, serious consideration is being given to the establishment of new medical schools in several States. It is the opinion, therefore, of the majority of the medical profession and of the medical educators that no disturbing shortage of physicians is in prospect. Medical educators are ready and eager to cooperate in effecting any reasonable expansion of the facilities for medical education that the public is willing to support.

Qualified instructors.—During World War II practically no young men were permitted to take the training necessary for a career of teaching in a medical school. The shortage of trained personnel that resulted, when added to the relatively low salary scales prevailing in many schools, has made it difficult for medical schools to fill vacant or newly created positions on their teaching staffs. The difficulty that the schools are encountering in finding a sufficient number of well-qualified instructors emphasizes one of the problems that must be faced in any attempt to expand the facilities for medical education.

Financial support.—The financial problems of the medical schools have been given much publicity in the past 7 years. A number of medical schools have never enjoyed proper financial support, and almost all schools have had difficulty in securing adequate funds in recent years. It is beyond the scope of this chapter to discuss this problem in detail. It can be said, however, that the efforts of the schools on their own behalf to secure additional funds have been meeting with increasing success as their parent universities and the public generally have been educated to understand the schools' needs.

In 1950, two closely related national organizations were formed to raise funds for the medical schools: The National Fund for Medical Education, which has as its objective the securing of contributions from industry, and the American Medical Education Foundation, sponsored by the American Medical Association, to raise funds from the medical profession. These two organizations have together raised more than 5 million dollars since their founding, and they look forward eventually to a joint annual goal of 10 million dollars.

Teaching methods and the curriculum.—While concern about enrollments and financial problems has tended to dominate discussions of medical education in recent years, the more fundamental problems of teaching methods and the curriculum have been receiving continuing study. Periodic realignment of the curriculum in medical education is made necessary by three forces that are continually at work: Advances in medical knowledge which may increase or decrease the relative importance of various subjects; changes in the form of medical practice such as the increased tendency toward specialization and the further development of group practice; and changes in the pattern of graduate medical education. Further, as the amount of factual data increases it becomes necessary either to lengthen the period of training or to discover more effective teaching methods.

There is an almost universal desire to reexamine the curriculum and to determine if it is meeting the needs of the modern graduate. The emphasis given to and the method of presenting many of the standard subjects need to be reviewed. A number of new subjects or old subjects to which new importance has recently been attached are waiting to be evaluated and assigned their proper place in the curriculum.

Progress has been made in several schools in introducing teaching methods that are conducive to increasing the student's initiative and his capacity for independent work. However, probably the most serious criticism that can be made of medical education as it has developed in this country is that the willingness of the medical schools to grant the individual student more freedom in planning and executing his work has not kept pace with the increasing capacity of the modern medical student to accept such responsibility. Altogether too much spoonfeeding and minute surveillance of students survive for a discipline that attracts mature and serious students.

The other fundamental criticism which can be directed at medical education today is its failure in most instances to stimulate the student to view medicine broadly in its relationship to the other concerns of man and society. So demanding and absorbing is the study of medicine that it is all too easy for the student to permit his thinking and interest to become isolated from the past and present struggles of man and society to advance spiritually, culturally, economically, and politically. There is good evidence to indicate that the medical schools have an important responsibility to assist their students more than they have in the past, to acquire a proper perspective of the role that medicine plays in assisting individuals and groups to achieve their destinies.

Selection of students.—There are few problems to which the medical schools are giving more attention than that of finding improved methods for the selection of students. Each school is continually analyzing its own procedures. A special committee of the Association of American Medical Colleges has had this subject under close study for several years. This committee is sponsoring the administration of a special aptitude test by the Educational Testing Service and other research projects designed to discover the most satisfactory techniques and criteria for the selection of students. The importance of such studies can be determined from the fact that a reduction of only 1 percent in the percentage of failures in each entering class for the schools of the country as a whole would represent an increase in the annual number of graduates equivalent to the graduating class of an average-sized medical school.

Medical and Basic Medical Science Schools

There are at present 74 fully approved 4-year medical schools and 6 approved schools of the basic medical sciences in the United States. In the following list the (*) indicates a basic medical science school. The numbers after the name of each school indicate the students pursuing the M. D. degree and those seeking advanced degrees for the year 1953–54. The numbers do not include a total of 133 part-time, special, and irregular students in 37 schools.

ALABAMA
University of Alabama Medical College, 295, 75

ARKANSAS
University of Arkansas School of Medicine, 318, 9

CALIFORNIA
College of Medical Evangelists, 365, 0
Stanford University School of Medicine, 237, 2
University of California Medical School, 309, 24
University of Southern California School of Medicine, 273, 45

COLORADO
University of Colorado School of Medicine, 305, 243

CONNECTICUT
Yale University School of Medicine, 303, 108

DISTRICT OF COLUMBIA
Georgetown University School of Medicine, 455, 41
George Washington University School of Medicine, 350, 110
Howard University College of Medicine, 299, 0

GEORGIA
Emory University School of Medicine, 285, 10
Medical College of Georgia, 304, 1

ILLINOIS
Chicago Medical School, 280, 0
Northwestern University Medical School, 533, 35
Stritch School of Medicine of Loyola University, 336, 59
The University of Chicago, The School of Medicine, 280, 123
University of Illinois College of Medicine, 667, 93

INDIANA
Indiana University School of Medicine, 575, 9

IOWA
State University of Iowa College of Medicine, 458, 87

KANSAS
University of Kansas School of Medicine, 456, 15

KENTUCKY
University of Louisville School of Medicine, 381, 16

LOUISIANA
Louisiana State University School of Medicine, 448, 8
Tulane University of Louisiana School of Medicine, 516, 49

MARYLAND
Johns Hopkins University School of Medicine, 294, 5
University of Maryland School of Medicine and College of Physicians and Surgeons, 404, 5

MASSACHUSETTS

- Boston University School of Medicine, 288, 51
- Harvard Medical School, 531, 47
- Tufts College Medical School, 449, 17

MICHIGAN

- University of Michigan Medical School, 728, 139
- Wayne University College of Medicine, 277, 107

MINNESOTA

- University of Minnesota Medical School, 490, 1,140

MISSISSIPPI

- University of Mississippi School of Medicine,* 113, 2

MISSOURI

- St. Louis University School of Medicine, 491, 39
- University of Missouri School of Medicine,* 85, 13
- Washington University School of Medicine, 366, 0

NEBRASKA

- Creighton University School of Medicine, 300, 31
- University of Nebraska College of Medicine, 344, 9

NEW HAMPSHIRE

- Dartmouth Medical School,* 46, 0

NEW YORK

- Albany Medical College, 212, 10
- Columbia University College of Physicians and Surgeons, 465, 2
- Cornell University Medical College, 337, 21
- New York Medical College, Flower and Fifth Avenue Hospitals, 478, 7
- New York University College of Medicine, 530, 31
- State University of New York Downstate Medical Center, New York, 573, 4
- State University of New York Upstate Medical Center, Syracuse, 285, 13
- University of Buffalo School of Medicine, 279, 8
- University of Rochester School of Medicine and Dentistry, 280, 96

NORTH CAROLINA

- Bowman Gray School of Medicine of Wake Forest College, 200, 6
- Duke University School of Medicine, 316, 0
- University of North Carolina School of Medicine, 226, 51

NORTH DAKOTA

- University of North Dakota School of Medicine,* 70, 10

OHIO

- Ohio State University College of Medicine, 575, 162
- University of Cincinnati College of Medicine, 352, 44
- Western Reserve University School of Medicine, 335, 33

OKLAHOMA

- University of Oklahoma School of Medicine, 380, 35

OREGON

- University of Oregon Medical School, 267, 12

PENNSYLVANIA

- Hahnemann Medical College and Hospital of Philadelph 393, 5
- Jefferson Medical College of Philadelphia, 666, 28
- Temple University School of Medicine, 516, 89
- University of Pennsylvania School of Medicine, 502, 73
- University of Pittsburgh School of Medicine, 381, 19
- Woman's Medical College of Pennsylvania, 181, 0

PUERTO RICO

- University of Puerto Rico, School of Medicine—School Tropical Medicine, 184, 0

SOUTH CAROLINA

- Medical College of South Carolina, 275, 15

SOUTH DAKOTA

- University of South Dakota School of Medical Sciences,* 61,

TENNESSEE

- Meharry Medical College, 257, 3
- University of Tennessee College of Medicine, 750, 63
- Vanderbilt University School of Medicine, 206, 14

TEXAS

- Baylor University College of Medicine, 358, 24
- Southwestern Medical School of the University of Texas, 394,
- University of Texas School of Medicine, 599, 23

UTAH

- University of Utah School of Medicine, 198, 41

VERMONT

- University of Vermont College of Medicine, 189, 10

VIRGINIA

- Medical College of Virginia, 372, 12
- University of Virginia School of Medicine, 292, 5

WASHINGTON

- University of Washington School of Medicine, 287, 65

WEST VIRGINIA

- West Virginia University School of Medicine,* 61, 1

WISCONSIN

- Marquette University School of Medicine, 391, 25
- University of Wisconsin Medical School, 318, 74

Total enrollment:	
In courses for the M. D. degree:	
Men	26, 725
Women	1, 502
Total	28, 227
In courses for advanced degrees	3, 913
Grand total	32, 140

In addition to the figures above, the University of California at Los Angeles, with only 3 classes in medicine, enrolled 85 men and 6 women, and the University of Miami School of Medicine, with only 2 classes in medicine, enrolled 59 men and 8 women.

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17. Music Education

BY ROBERT A. CHOATE [*]

MOST COLLEGES AND UNIVERSITIES in the United States offer education in music, much of it characterized by high standards of excellence. Orchestras, bands, choruses, a cappella choirs, operatic and chamber groups—all are commonly found in the United States college or university. Intensive training for a professional career in music is readily available in the college or conservatory. Advanced studies in theory, history of music, and composition are found in numerous graduate schools. Thousands of teachers and supervisors are trained annually to meet the demands of a broad music program in public and private schools and colleges. The church musician finds an ever-increasing provision for his preparation in many institutions. These extensive music activities have focused attention on universities and colleges as the providers of leadership in the field of music.

The Music Profession

A sizable number of persons are engaged in the music profession. (See table 36.) From the data available it appears that the profession as a whole has not been growing rapidly in recent decades. However, certain segments in the field of music, notably music education from preschool through college and university, have grown appreciably within the last quarter century.

The variety of opportunities for performing musicians is great, but the number of musicians who can subsist on earnings from music is comparatively small. Symphony orchestras and a few ballet and opera companies provide employment for instrumental musicians who supplement their incomes by occasional work in musical comedy, operettas, or other musical shows. Radio and television orche tras offer limited employment. The growth of goo orchestras in smaller cities throughout the countr has afforded new opportunities but not sufficient, a rule, to do away with the need for supplement employment from teaching or other professional wor Many musicians find semipermanent work in danc bands and orchestras. The opportunities in th concert field or operatic stage are extremely limite despite the number of singers who aspire to suc careers. An expansion of these opportunities h been provided through television.

Churches employ a large number of organist choirmasters, and singers. The minister of musi found in many churches is a well-trained musicia and, in many southern and western cities partic larly, receives an excellent salary.

Conducting offers a limited field of opportunit to a highly specialized group. In former year conductors for major musical organizations we secured from abroad. At present numerous im portant conducting posts are held by men who r ceived their training in this country.

Table 36.—Musicians and music teachers in the United Sta reported by the Decennial Census, 1870–1950

Year	Number	Year	Number	Year	Numbe
1870	16, 170	1900	92, 174	1930	165, 1
1880	30, 477	1910	139, 310	1940	161, 5
1890	62, 155	1920	130, 265	1950	161, 3

Source: Bureau of the Census.

Composition, writing and arranging for radi television, movies, recording, arranging for danc bands or for school bands and orchestras, newspap criticism, the music librarian, music publishin music merchandising, and music therapy are vario areas of the profession for which an education music may prepare.

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The Teacher of Music

The virtuoso whose interest is primarily in performing and the training of performers is attracted to a music school or conservatory or to the establishment of his own private studio—or both. The performing artist in his later years generally turns to teaching as a means of livelihood or continued professional interest. Many symphony musicians, artists, school teachers, and church musicians supplement their income by maintaining a private studio.

Doubtless the greatest number of vocational opportunities for the musician exist in teaching. The added compensations of income certainty, domestic stability, retirement benefits, and desirable environment have greatly increased the stature of this professional activity during the past 30 years. Since music is commonly accepted as an integral part of the child's education, teacher demand pyramids similarly to that of school enrollments. Thus, the greatest opportunity lies in the elementary school, and diminishes toward the college level. Conversely, increased preparation of the teacher, particularly at the advanced graduate level, tends to invert the pyramid of supply, creating a surplus of teachers aspiring to positions in higher education.

State departments of education require the public school music teacher to prepare himself in educational philosophy, teaching processes, and growth and development of the child, as well as in his musical art. Private schools generally are not held to such certification requirements. The baccalaureate is commonly required with course stipulation for a teaching certificate, but many States issue temporary certificates on lower requirements.

Advanced degrees are usually necessary for obtaining administrative positions or instructing academic and theoretical courses at the college level. In applied areas, professional proficiency and successful experience remain as principal criteria for employment. Certain State institutions, however, because of the necessity for standardization of procedures for determining faculty promotion, salary schedules, and tenure by State legislation, have established advanced study and degrees as objective criteria.

Organizations of Musicians; Publications

The growth of the profession of music, particularly those segments which concern higher education, is indicated by the coincident rise of professional organizations and the literature of the profession. Earliest of such organizations was the Music Teachers National Association (MTNA), founded in 1876. The MTNA holds annual meetings and is concerned with problems related to the private music teacher, music in schools and colleges, community music, and research in numerous fields. It has exerted considerable influence in music teaching through its permanent committee organizations. The proceedings furnish invaluable records of the musical development in the country. *American Music Teacher* is issued five times annually.

The Music Educators National Conference (MENC), founded in 1907 as the Music Supervisors National Conference, has afforded leadership in the development and formulation of music instruction in the public schools and colleges of the United States. The conference functions as a national organization with 6 divisions, 47 affiliated State units, and several auxiliary and associated organizations. National and divisional conventions are held biennially in alternate years. State units hold at least one annual meeting. The growth of the conference has been rapid, consisting at present of almost 25,000 members, and its influence has been notable in setting instructional patterns, raising the standards for music instruction, establishing adequate equipment standards, defining methods of credit for music study, advancing instrument study, correlating school and college programs, and promoting interest in community music as well as international relations and understanding through music. The *Music Educators Journal* is issued 6 times yearly. Until 1940 yearbooks were published. The first issue of the *Journal of Research in Music Education* was released in the spring of 1953. Serving as the Department of Music Education of the National Education Association, the conference maintains an office in Washington, D. C., as well as its national headquarters in Chicago.

The American Musicological Society (AMS) is an organization for the advancement of research in the various fields of music. Organized in 1934, the society is divided into regional chapters which hold regular meetings at which papers of musicological interest are read. The *Journal of the American Musicological Society* is published regularly.

The National Association for Teachers of Singing (NATS), founded in 1944, has contributed significantly in helping to guide curriculum developments in vocal instruction. Especially of benefit is the clarification of fundamental aims and procedures in voice training, establishment of codes of ethics, and the compilation of teaching literature of a high quality. NATS sponsors national and sectional meetings and summer workshops.

The National Association for Music Therapy (NAMT) was organized in 1950 to coordinate the wide activities and research in this vital area. Publications are issued by the association.

Although not as closely associated with the colleges as the above-named organizations, the American Guild of Organists exerts a great influence on musical standards and accomplishments of organists in the United States. Examinations covering performance and general knowledge of music are given for the certificates of associate (AAGO), and fellow (FAGO). The guild is subdivided into numerous chapters which meet regularly and administer examinations. The *Diapason* is the official magazine for the guild.

As a result of the first International Conference on Music Education, which was held in Brussels, Belgium, in midsummer 1953, an International Society of Music Education was formed. This organization has as its aims the exchange of philosophies, objectives, and materials in music teaching, the furtherance of understandings and relationships through music, and the projection of further international conferences.

Development of Music in Higher Education

Music was relatively late in entering the curriculum of the American college. Although there are numerous records of musical activity in early colleges, the first professorship announced in music was in Oberlin College in 1835—a "Professorship of Sacred Music." The Harvard Musical Association was established in 1837, although the Pierian Sodality (which still flourishes at Harvard) was founded as early as 1808. The first recorded bachelor's degree in music was that given by Boston University in 1876. The gap of 200 years from the founding of Harvard College (1636) to the earliest recognition of music in higher education is understandable when colonial living conditions and the Old World influences on American education are considered. There was little place for music in these first institutions which were largely prototypes of English or continental schools.

The numerous forces affecting higher education, however, predestined its institutions to a characteristically different role both in scope and influence. Among these forces were the pioneers of musical education and the societies dedicated to its future. After 1870, music professorships and departments of music were established in several of the leading colleges, and numerous conservatories were founde From 1870 to the present, establishment of universi schools of music has been nationwide. Mu departments constitute an integral division of th liberal arts college, and noted musicians have bee appointed to professional chairs, indicating th recognition of music instruction.

A coordinate development in the early years o this century was the attention given to teach preparation in the field of music. Although mu instruction had begun in the public schools of Bost as early as 1838 and had spread rapidly to oth cities throughout the United States, training of th music teacher was supplied by conventions an institutes sponsored largely by various book-pu lishing concerns. These companies contribut significantly to the remarkable growth of early mu and supplied training not to be found in the colle of that day. As the public school music progra expanded, the need for increased emphasis teacher training and the responsibility for assumi leadership in this vital area became evident. Cour in music pedagogy, methods, and materials we added to the college curriculum, and teacher traini departments were organized.

In the present century, music has risen steadily to place of equal status with other subjects in the liber arts curriculum. Most of the 1,400 or more colleg accredit courses in music, and adequate recognition given in both undergraduate and graduate degree

Surveys and Studies

The status and progress of education in music h been the subject of several studies and surveys. O of the earliest of these was made by Rose Yont 1916 and reported as *The Status and Value of Music Education.*[1] It described the development of mus in the public schools, normal schools, universities a colleges, and extension work.

A bulletin entitled *Present Status of Music Instru tion in Colleges and High Schools, 1919–20* was pu lished by the U. S. Bureau of Education in 192 The study was made by a joint committee of th educational organizations. It reported that 2 colleges and universities allowed some credit in mus toward the academic degree, 87 of them allowi more than 20 semester hours of such credit.

Owing to the great concern which developed o college entrance credits, the Research Council of t Music Supervisors National Conference made investigation which was reported in 1930 as the *Survey of College Entrance Credits and College Courses in Music*.[1] It presented information on the offerings in music in the institutions of higher education.

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[1] Published by the Woodruff Press, Lincoln, Nebr., 1916.

A study of music in 30 colleges and universities was made possible in 1932 through a grant from the Carnegie Corporation. This investigation for the Association of American Colleges led to the report, *College Music*, prepared in 1935 by Randall Thompson, director of the study.[2]

Association of Music Schools

The National Association of Schools of Music (NASM) consisting of schools of collegiate grade was formed in 1924 to encourage closer relationships among schools of music and to establish programs of cooperation with various educational associations which directly or indirectly affected the cause of music. Annual meetings are held for the official representatives of the association. As of December 1952 the Association had 179 full members, 23 associate members, 8 junior college members, and 1 preparatory school member.

Accreditation

Since the National Association of Schools of Music was formed, it has served as the principal accrediting agency for schools of music and a limited number of junior colleges and preparatory schools. With a membership of over 200 schools, the NASM maintains high professional standards through its accrediting and annual evaluation, has established a code of ethics, and suggests minimum curriculums for undergraduate and graduate degrees. Criteria used in determining eligibility for membership relate to equipment, faculty, organization, student body, curriculum, and actual teaching results.

Regardless of the flexible standards of the National Association of Schools of Music, departments of music associated with teachers colleges have encountered considerable difficulty in music accreditation. The American Association of Colleges for Teacher Education (AACTE) has maintained a working relationship with the NASM. Within the past several years a cooperative committee of the NASM, AACTE, and the Music Educators National Conference have jointly presented new standards and schedules for evaluation of the music education curriculums. These standards have given a balanced emphasis to adequate, attainable, and desirable accomplishments in music areas, as well as in the liberal arts and professional education areas. Recently the National Council for Accreditation of Teacher Education has been formed, representing the principal interests in teacher education. It is expected to assume the accrediting functions now being performed by the AACTE.

Schools and Enrollments

In the school year 1952–53, 671 institutions of higher education in the United States conferred earned degrees in music. Such degrees are offered in four types of institutions.

1. *Professional schools or conservatories.*—Professional schools of music or conservatories offer extensive work embracing a considerable variety of courses, undergraduate and graduate. Inasmuch as most such schools are parts of major universities or colleges, there is also provision for a concentration in music by the liberal arts student who wishes to receive the bachelor of arts degree. In most schools a master's degree program is available. Schools representative of this type are: Yale University, Oberlin College, University of Illinois, University of Michigan, Boston University, Northwestern University, and University of Rochester (Eastman School of Music). Conservatories offering varied courses are: Juilliard School of Music, Chicago Conservatory, Cincinnati Conservatory of Music, and the New England Conservatory of Music.

2. *School of fine arts.*—A department or division of music in a college or department of fine arts offers opportunities for professional concentration in most major curriculums in music. Such organizations are found at the State University of Iowa, Drake University, University of Kansas, Carnegie Institute of Technology, to name but a few. The professional degree or the bachelor of fine arts may be conferred.

3. *Teachers college.*—The teachers college offers specialization in music with concentration in pedagogical and educational concepts as well as in applied areas. Academic requirements are heavy, and in many States a fifth year is being added to the program for depth and background. State colleges in New York, Illinois, and California are typical.

4. *Liberal arts college.*—Departments of music in liberal arts colleges offer the diversified curriculums of the professional school, but generally with fewer hours of music credit and a greater number of liberal arts courses. Most have developed a fairly extensive range of subjects in music history, theory, and applied

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[1] Published by the National Bureau for the Advancement of Music, New York, N. Y., 1930.

[2] Published by the Macmillan Company, New York, 1935.

Table 37.—**Enrollment in professional music courses in selected years from 1931 through 1944**

Year	Undergraduate		Graduate		Total
	Men	Women	Men	Women	
1931–32	1,628	4,401	79	83	6,191
1933–34	2,527	6,927	105	118	9,677
1935–36	4,056	7,922	148	179	12,305
1939–40	4,770	8,279	365	430	13,844
1941–42	3,907	7,967	300	363	12,537
1943–44	1,166	7,008	150	344	8,668

Source: Data compiled from Reports of the United States Office of Education. Data have not been collected since 1944.

music leading to degrees. More than 80 percent of degrees in music are conferred by schools of this type. Only a few of these schools can be indicated: Brown University, University of California, Cornell University, Hunter College, Occidental College, New York University, Wellesley College.

Data on enrollments in schools and departments of music are incomplete; such data as are available for recent years are shown in table 37.

Admission Requirements

Students normally may enter the professional music school or college directly from high school. Academic requirements for admission usually stipulate graduation from an accredited high school or its equivalent. A minimum of 15 credits is assumed, and the National Association of Schools of Music recommends that these include 3 units of English, 2 in foreign language, 1 in mathematics, 1 in science or history, and 8 in elective subjects. Five elective units must be in academic subjects; the remaining units may be in music or other subjects.

A knowledge of elementary theory in music sufficient for admission to the first-year theory courses is desirable, and entrance requirements in applied music have been recommended by the National Association of Schools of Music. Although other entrance requirements are not uniform, many schools require character references, scholastic profile, audition, psychological and aptitude tests, and health records. Some schools require music aptitude and achievement tests, although the latter are used chiefly for course sectioning or establishing advanced standing. With the commendable expansion of the secondary school course to include theoretical subjects in music and the increase in preparatory departments, the student is sometimes proficient enough to proceed immediately to advanced courses. T same is true in applied music.

Admission to advanced standing for work tak in other colleges is permitted throughout the countr Difficulties arise in such transfers particularly entrance to an accredited school from one that not accredited. Even within membership of t NASM, no school is obliged to accept without exam nation the music credits from another institution. I applied music, advanced standing may be give tentatively after examination, in transfer cases, b such standing must be confirmed by advanced stud in residence in the same field. In academic a theoretical subjects, substantiation examinatio generally are given for work taken in nonaccredite institutions to insure knowledge of subject matte basic to the curriculum.

Professional Curriculum and Degrees

In earlier years, courses in music were largel theoretical and historical. Such courses were considered a part of a cultural education, discipline suitable for higher learning. Instruction in practical music was considered outside the province of the college. Extracurricular activities provided some music instruction; most of the colleges offered very few courses. In the late 19th century, as the number of colleges increased and the changing philosophy allowed electives and enrichment subjects, music courses became more numerous, and gradually the music major was established.

Most curriculums in music consist of a balanced selection of courses from the following areas: liberal arts courses, music history and literature, theory and composition, practical or applied music, and professional training courses (education, techniques, pedagogy, materials). Academic credit toward degrees may or may not be given for choruses, choirs, orchestras, opera classes, bands, and ensembles. The selection of courses from these 5 areas to form a course of study depends on the desired career, degree sought, or the type of school offering the course.

Various professional courses are offered throughout the country: the major in applied music concentrates in the applied courses in preparation for a professional career as a performer, e. g., concert artist or member of a symphony orchestra. Thorough discipline is gained through basic musicianship, and through theory and literature courses in music, and in most schools there are minimum requirements in liberal arts. The majors in composition, in theory, and in church music are commonly offered with obvious course selections from the major areas. The major in history and literature of music is in many schools a preparatory course for graduate study in musicology; the major in music education provides professional training as a musician and as teacher in schools and colleges with concentrations in vocal or instrumental fields, or both; majors in opera and conducting are offered occasionally; and a recent major instituted by some colleges is that of music therapy.

Most of these professional undergraduate curriculums require 4 years for completion and lead to the professional degrees: bachelor of music, bachelor of music education (or school music), or bachelor of science in music education.

Some current trends evident in the organization and content of undergraduate curriculums are: (1) broadening of all music curriculums to include more of the general culture and background courses, with a compensatory lessening of specialized skill and technique subjects; (2) an understanding of the developmental approach in music teaching with an emphasis upon the attitudes and feeling-tone of the class; (3) increased emphasis on functional aspects of music, including the use of indigenous, folk, and popular music and the use of music in therapy and in special education; and (4) recognition of technological advances, particularly in audiovisual resources.

The numbers of earned degrees awarded in music in various recent years are shown in table 38.

Graduate Study Leading to Advanced Degrees

As a discipline compatible with advanced degree tenets, music has emerged much more slowly than its more academic relatives. The graduate school has almost reluctantly given ground in permitting doctoral conferment in music. (See table 38.) It is safe to assume that there are extant at least 450 or 500 doctorates that have been awarded in music or in a related area where music was used as a thesis assignment. An exact figure is difficult to determine because many musicians have written in such fields as psychology, anthropology, and history, to name but a few. More than 375 theses have been written in the area of music. This number does not take into account the degrees for which dissertations were written outside the music field.

In past years, no less than 65 institutions have cataloged or conferred the doctoral degree, or permitted theses in the area of music. At present, at least 49 schools list the degree or have initiated plans for inclusion of the doctoral curriculum. Of these, at least 37 have conferred the degree and have active programs in force. Presumably, the remaining 12 schools have accepted candidates.

Although other degrees are awarded, the doctor of philosophy is the most commonly sought of the doctoral degrees in music. It probably is also the most widely recognized. The doctorate in education has been cataloged by 18 institutions and normally requires 3 years from the baccalaureate for completion, as does the doctorate in philosophy. Basic differences are found in language requirements and the type of thesis for the two degrees. The curriculum for the doctorate in education normally requires more hours in education and fewer in other

Table 38.—Earned professional degrees in music in selected years from 1917 through 1953

Year	Bachelor's degrees			Master's and second professional degrees			Doctor's degrees			Total
	Total	Men	Women	Total	Men	Women	Total	Men	Women	
1917-18	230									230
1929-30	1,347									1,347
1931-32	1,168			74			1			1,243
1933-34	1,181			71			3			1,255
1935-36	941			54			11			1,006
1939-40	1,534			368			8			1,910
1941-42	1,405			553			6			1,964
1943-44	1,045			320			8			1,373
1947-48	5,284	1,766	3,518	1,043	631	412	27	22	5	6,354
1948-49	6,662	2,920	3,742	1,469	934	535	30	28	2	8,161
1949-50	7,934	4,069	3,865	1,489	942	547	34	32	2	9,457
1950-51	7,723	3,740	3,983	1,730	1,172	558	48	42	6	9,501
1951-52	7,015	3,056	3,959	1,738	1,145	593	55	51	4	8,808
1952-53	6,546	2,665	3,881	1,694	1,115	579	61	55	6	8,301

Source: Data compiled from reports of the Office of Education.

cognates. The National Association of Schools of Music has made specific recommendations for the doctor of philosophy in music in the areas of musicology, composition, theory, and music education.

Other degrees found more rarely are the doctor of fine arts (D. F. A.), the doctor of sacred music (D. S. M.), and the doctor of music (Mus. Doc.). In 1952, the NASM approved the awarding of the earned doctor of music as a professional degree in music, subject to conditions determined by the Graduate Studies Commission of the association. Before this date, the doctor of music degree in America had been solely an honorary award.

Postcollege Education Not Leading to Degrees

Summer music study has been an integral part of university summer courses since before the turn of the century. Affording advanced study, professional improvement, and study under noted directors and leaders in music, summer terms constitute a major resource for the teacher in particular. Evening colleges and extension courses of most universities afford similar opportunities during the school year—classes in history or enjoyment of music, techniques and methods of teaching, or requested in-service classes for specific groups. Some universities offer radio program study through their broadcasting facilities. Recently experimental television programs have been initiated. With expanding educational television channels, doubtless numerous music programs will be developed for this medium of communication.

Current Problems

Administrative, financial, and professional involvements, conflicting educational philosophies, and the need for constant evaluation create situations in higher education which call for persistent and straightforward consideration by faculties, administrators, and professional organizations.

Students.—There is great need for improvement in the selection of students who prepare for the music profession. Early identification of potential musicians and music teachers is most desirable. A reexamination of scholarship and aptitude testing, audition procedures, and placement examinations—undergraduate and graduate—should be made by the college. There is also need for developing better and more comprehensive student personnel programs.

The curriculum.—The problems of curriculum content are acute and complex in music. In the college, divergent viewpoints exist concerning the balance in the music curriculum between liberal arts subjects and professional courses, between general and specia fields. Within the music profession there are divers attitudes regarding the balance between the theoretical and historical subjects and the performanc areas, between the academic and the applied field. Others are concerned with the distribution of course which train for broad musicianship and those which are prerequisite to a career in teaching—cours in education and liberal arts required for Sta certification, in techniques, methods, and material.

Another concern is that involving the place of music in the program of general education. On the one hand there is an awareness that music schools give limited attention to extradepartmental music activities which could contribute much to general education; on the other hand there is a recognition that because of intense specialization, interdisciplinary relationships and understandings are rarely included in the music curriculum. Music graduates generally are inadequately prepared to function in the program of general education.

Vocational opportunities materially affect the content of many curriculums. Because of employment limitations in the professional music career, many applied curriculums include courses in pedagogy which might assist a teacher in organizing a private studio while establishing a career in performance. The recent appearance of the opera workshop in the college curriculum has afforded opportunities for talented singers to perform operatic roles, study dramatic techniques, and learn a wide range of operatic literature. The vitality of this movement has enlisted support in many areas and gives indication of becoming a dynamic influence in the college and community. Capable directors of such workshops are in great demand.

Expanding enrollment in public schools, together with financial stability and professional stature in the teaching profession, has created an extensive demand for music teachers. Inasmuch as the music program now in effect in many public schools demands a thoroughly trained musician-teacher, college music curriculum planners are becoming aware more than ever of the cultural and educational potential of the teaching profession. Former attitudes of condescension and mere tolerance of the teacher-training program by faculties and administrators are being replaced by understanding and enthusiastic cooperation in the strengthening of the program.

Musicianship.—Development of basic musicianship is a major concern in most schools of music, and rightly will continue to be so. Today the music teacher is required to meet far more exacting standards than in previous years, but the musical accomplishment is currently far from ideal. Many schools are increasing musical attainment through provision for more comprehensive musical instruction and experiences rather than through an increase in courses in teaching methods and technique.

Preparation for college teaching.—The holder of a doctoral degree in music almost invariably finds himself associated with the teaching profession. It is desirable therefore that preparation of the graduate student for his eventual educational service receive particular attention. Some institutions provide courses which are designed to acquaint the graduate student with his role as a college or university instructor, but at present no graduate curriculum professes to include a substantial listing of courses with such design in the area of music.

Research.—Research studies in music are pursued in varying degrees in the institutions of higher education. They are of three types. Some of them are essentially studies in music; they deal with analyzations of formal structure and the history of music and music literature. Unfortunately, opportunities for this type of research in music are too rare in schools in the United States. Other studies arise out of such fields of investigation as anthropology, literature, psychology, and music. Studies of folk music serve as examples.

The recent adoption of graduate degrees in music education is resulting in research studies in that field. Current undertakings are largely inquiries on practices and extent, with some evaluation.

Music and international relations.—The subject of music and international relations has live interest on every college and university campus in the United States. Practically every college and university has some students or visiting professors from other countries. Whether or not these students or professors are musicians by profession, they can usually bring to campus activities information about, and demonstrations of, music in their countries.

Serious studies are undertaken in courses on music of other countries—Latin America, Africa, Far East, India, etc. What is too often neglected in college and university courses dealing with music and international relations is serious consideration and investigation of music as a factor in peace and understanding among peoples of the world.

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18. Nursing Education

By LUCILE PETRY LEONE* and ELLWYNNE M. VREELAND**

NURSING is the largest of the health professions in this country. The availability of professional and other nursing personnel in number and quality sufficient to meet national needs is an important factor in the health of the citizens. To the educational system of the Nation falls responsibility for educating this large group of essential health personnel. The educational system for professional nursing includes some schools which are parts of colleges and universities and others which are single-purpose educational institutions operated primarily by hospitals.

Nursing Services and Personnel

The nursing services demanded by the people of this country have expanded greatly, particularly in the last decade. Many more patients go to hospitals for care and many more people are being reached by public health services than formerly. The value of health programs for industrial and agricultural workers, given additional recognition during World War II, has created new fields of employment.

Expansion of demand is not only quantitative but also qualitative. The phenomenal advances of medical science are brought to people by nurses who must possess understanding of biological and physical sciences as well as skills in employing intricate therapeutic measures requiring close observation. Modern health work calls for a wider acceptance of psychological principles in almost every kind of therapy. Attention is given to prevention of diseases and to keeping healthy as well as to curing illnesses. Responsibility for care of patients extends through the period of rehabilitation—social, vocational, and physical. Some methods of care require the participation of patients and families in treatment—witness early ambulation and rehabilitation of the patient with polio. Community health with the social and psychological factors of environmen is emphasized along with individual health, an more group methods are being used, for exampl group psychotherapy and mass X-ray in tuberculosis case finding.

The gamut of nursing activities to be carried out i now so long and varied that several types of nursin personnel are evolving. They require a wide rang of professional and nonprofessional competencie To give the services needed, there are gradua registered nurses, trained and untrained practic nurses and attendants, and nursing aides who hav had no preemployment training. In addition t direct services to patients given by graduate re istered nurses, there are administrative, supervisor and consultative services in several fields of employment, and instructional services in education institutions for the various types of nurse student Nurses in the Armed Forces are commissione officers and give a wide variety of services. A sma but important group of outstanding America nurses serve the United States as members technical assistance program health missions in mo than 30 other countries around the world. Nurs also carry on research as a part of clinical research i medicine and studies of nursing itself.

The total number of graduate registered nurs employed in the United States increased from abou 50,000 in 1910 to 215,000 in 1930 to an estimate 375,000 graduate nurses (not all currently registere who are practicing in 1954. The rate of increa has been considerably more rapid than that of t population. But the increase in demand has bee even more rapid, and demand promises to contin to exceed the supply.

Slightly more than half of all graduate registere nurses in the country are employed in the more tha 6,000 hospitals, and the remainder are distribute among public health agencies, doctors' office industrial health programs, the private practice nursing, and the faculties of schools of nursing.

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hospitals, slightly less than half of the total nursing personnel is comprised of graduate registered nurses, the other half being comprised of other nursing personnel—practical nurses, attendants, and nursing aides. More than 200,000 practical nurses, attendants, and nursing aides are employed in hospitals, and an unknown number outside hospitals. The total number of graduate registered nurses needed in 1954 for all purposes, including military, was estimated by the National Security Resources Board at 404,500.

Professional Organizations

Until recently there were six national organizations of graduate registered nurses. On the recommendations of professional and other experts who reviewed the organizations, the structure was revised. There are now two major organizations to which all graduate registered nurses are eligible to membership—the American Nurses' Association (ANA) and the National League for Nursing. All members of the ANA are nurses, and the organization is primarily concerned with the welfare and professional standards of the individual nurse. The *American Journal of Nursing* is its official organ.

The other major organization, the National League for Nursing, is concerned primarily with improvement of nursing services in all fields of employment and with continued development of education for these fields. In accomplishing its purposes it works cooperatively with related professional organizations. It has institutional, agency, individual, nonnurse, and practical nurse members. The *Nursing Outlook* is its official journal.

Licensure of Nurses

The first nurse practice act was passed by North Carolina in 1903. By 1923 all States had laws regulating the practice of nursing. Most of these acts restrict the title "registered nurse" to those who have met requirements specified in the law or regulations, including passing a State examination, but do not prohibit the practice of nursing by those who do not claim to be registered nurses. Six States have mandatory laws requiring "all who nurse for hire to meet stated standards under one or the other of the titles specified in the law or regulations."

Requirements for licensure are set by each State and vary considerably. The migration of nurses from State to State is stimulating a trend toward greater uniformity. State examinations are now almost entirely uniform, being secured from a national test pool developed by a department of the National League for Nursing. Each State, however, sets its own passing score, and, though considerable variation remains, this difference between States too is gradually becoming narrower.

About 42 States also license practical nurses, variously titled, including "vocational nurse" and "attendant." More than 50,000 practical nurses hold State licenses to practice. Since the movement is new and most laws provide an initial period of waiving educational requirements, a fairly large number of licensed practical nurses are qualified primarily by experience. The proportion of licensed practical nurses who have had vocational training, however, will steadily increase in the next few years.

Development of Nursing Education in the United States

The first nursing schools in this country were founded in 1873. The number of schools increased greatly in the early years of the 20th century and reached a figure well above 2,000 in the 1920's. In all but a few instances these schools were operated by hospitals, and the service given by students substantially contributed to the hospitals' needs for services. Since the late twenties the total number of hospital schools of nursing has gradually decreased to slightly less than 1,000. For several years all schools of nursing have required high school graduation for admission. A continuous improvement in the general quality of the education in these schools which offer diploma programs and a gradual increase in national total enrollment have accompanied the decrease in number of schools. Considerable variation in quality of education, however, still exists. These diploma programs comprise one type of educational program termed "basic"; that is, programs which prepare for the generalized practice of professional nursing.

In 1916 the first basic programs in nursing leading to a baccalaureate degree were established in a small number of colleges and universities. About 150 colleges and universities now offer such programs. They are from 4 to 5 years in length and, like those operated by hospitals, prepare the graduate registered nurse for her first position. By December 31, 1953, 18 basic degree programs were graduating nurses who met requirements for employment in beginning positions in public health nursing as well as in all types of hospitals and other fields of employment.

The major progress in both types of basic nursing education has been in the greater variety in clinical experiences offered students and in the improved criteria for selecting their patient-care experiences. Both of these features capitalize on the reality element which characterizes nursing education. There has been greater correlation between scientific principles and clinical experience, and greater emphasis on psychological, social, and preventive aspects of patient care in hospital, clinic, and home. In addition, degree programs give increased attention to humanities and social sciences, and stimulate close association with students in other university programs. In both types of programs there have been general improvement in the quality of nursing faculty and a great decrease of authoritarian controls of learning and daily living.

The Division of Nursing Education of the National League for Nursing, with its membership from the fields of general education and nursing education, represents the profession's efforts to improve education. It is at present divided into two departments; one deals with degree programs, both basic (bachelor's) and advanced, and the other with diploma programs.

Surveys and Studies

A number of studies of nursing education and nursing care have been made since 1920, most of them since the end of World War II. The first noteworthy study was instigated and financed by the Rockefeller Foundation and directed by Josephine Goldmark. The report was published in 1923 under the title *Nursing and Nursing Education in the United States.* This study stimulated the 5-year program of the Committee on the Grading of Nursing Schools, which began its work in 1926 and carried on a comprehensive analysis of nursing education that resulted in several publications.

At the close of World War II, under the leadership of the National Nursing Council and with funds from the Carnegie Foundation, a provocative analysis of nursing was undertaken. The report of this study conducted by Esther Lucile Brown was published in 1948 by the Russell Sage Foundation under the title *Nursing for the Future.* In 1950, under the leadership of the National Committee for the Improvement of Nursing Services, another comprehensive analysis of nursing education in the United States was undertaken by Margaret West and Christy Hawkins and published under the title *Nursing Schools at the Midcentury.*

A book, *Collegiate Education for Nursing*, by Margaret Bridgman, published in 1953 by the Ru
Sage Foundation, reports a study of curriculums
other characteristics of schools of nursing which
basic degree programs. It, along with Dr. Bro
book, is useful to administrators and facultie
colleges and universities where establishmen
improvement of a basic nursing program is
templated and to counselors who guide studen
the choice of a school of nursing.

In the field of financing nursing education,
studies of significance have been made. An
these are *Administrative Cost Analysis for Nu*
Service and Nursing Education, prepared by a
Commission on the Costs of Nursing Service
Nursing Education of the American Hos
Association, National League of Nursing Educa
and American Nurses' Association in 1940,
Cost Analysis for Schools of Nursing, prepared by
U. S. Public Health Service, Federal Security Age
in 1946. Another study which should lead
method for analyzing costs of basic collegiate nu
education in institutions of higher learning is
rently being conducted by the National Le
for Nursing in association with the Public He
Service.

Additional studies bearing particularly on the
of higher education in the preparation of nu
are reported in: *Factors in Nurse Education* (Pu
Health Reports, December 28, 1948, U. S. Pu
Health Service); *A Program for the Nursing*
fession, by the Committee on the Function
Nursing (Macmillan Co., 1948); and *Regi*
Planning for Nursing and Nursing Educa
(Teachers College, Columbia University, 1950).

Among these surveys and studies should be
cluded the efforts to improve nursing curricul
beginning with the publication in 1917 of a *Stan*
Curriculum for Schools of Nursing by the Nati
League of Nursing Education. This publica
recommended the hours of instruction and the w
of practice in the basic diploma program and
tained outlines of the major courses. Inasmuch
schools of nursing were rapidly increasing in num
and the standardizing effect of State Board
Nurse Examiners was just beginning to be
this publication had a marked effect in impro
instruction in nursing throughout the country
in making it more uniform. Ten years later
league revised the publication to include deve
ments in medical and nursing practice and the cur
emphasis on the scientific background of the nu

and to introduce more applications of principles of disease prevention.

The two publications, 10 years apart, gave schools of nursing the kinds of assistance needed at a time when a large proportion of the instructors were inadequately prepared for their positions, and when specified content was consonant with the educational philosophy of the schools. By 1937 many conditions had changed, and the third publication was titled *Curriculum Guide for Schools of Nursing.* This title reflected a new educational attitude toward the selection of content. It placed new emphasis on the goals of individual adjustment and growth, problem solving, and learning methods.

By 1947, when another publication by the National League of Nursing Education on curriculum might naturally have been expected, the need for such a publication had greatly diminished. Formulation of standardized tests on several levels in each subject-matter field was progressing, text and reference books were improving markedly, and effective consultation service on curriculum problems was available from several sources. The literature on the education of nurses had expanded. League committees had produced two publications which were particularly important: *Manual of Essentials of a Good School of Nursing* and *A Guide for the Organization of Collegiate Schools of Nursing.* Recent revisions of these publications make them currently valuable.

Since that time there has been a good deal of constructive work on curriculum revision by a multiplicity of National and State committees and by administrators and teachers in the schools. The universities offering graduate programs in education for nurses exert a vital leadership in the process of continuous evolution of curriculums of various types.

Accreditation

In 1949, the National Nursing Accrediting Service was formed by combining four previously existing accrediting agencies. With the establishment of the two major nursing organizations in 1952, this became the Accrediting Service of the National League for Nursing. Its long-range purpose is to engage all schools in the process of improvement. Its immediate purpose is to help schools discover their primary problems and take action on some of them. It is carrying out two programs at present—full accreditation and temporary accreditation. The term "temporary accreditation" is meant to carry the connotation of participation in the national self-improvement program rather than the connotation of provisional or conditional approval.

The nursing profession, undertaking educational accreditation only recently, has benefited by experience of other groups, as can be seen in the emphasis in its accreditation policies on self-improvement in schools and on unification of the various appraisal efforts. The recency of the beginnings of accreditation should, however, be considered by those using lists of approved schools; they should realize that some very good schools have not yet applied for accreditation. The nursing accrediting service cooperates in some instances with regional accrediting agencies in higher education, as these deal with universities in which there are degree programs in nursing, either basic or advanced.

All the slightly more than 1,100 basic diploma or degree granting schools of nursing at this writing are approved by their respective State Boards of Nurse Examiners. These boards apply minimum standards which most schools exceed in many respects. The State boards and the schools have welcomed the stimulation of the national accreditation program. Through a planned 5-year program of school self-study, State and regional problem-centered workshops, and consultation, steady improvement in nursing education is expected.

Either full or temporary accreditation has been granted to 887 basic programs in the country. On January 1, 1954, the programs fully accredited by the national agency numbered 228, of which 53 were bachelor degree programs and 175 diploma programs. Of the 659 programs with temporary accreditation (see above for meaning of "temporary"), 45 lead to the bachelor's degree and 614 to the diploma. Some schools offer both programs. In April 1953, the 862 schools with either fully or temporarily accredited programs constituted 75 percent of the total schools and enrolled 87 percent of the Nation's basic student nurses.

A list of the fully and temporarily accredited programs as of January 1, 1954, is published in the February issue of *Nursing Outlook.* Reprints of this list and information on accreditation can be obtained by writing the Accrediting Service of the National League for Nursing, 2 Park Avenue, New York City.

Schools and Enrollments

The diversity of activities of modern nursing, ranging from highly technical and deeply psychological to simple comfort and hygienic measures, has called for differentiation of functions among a variety of nursing personnel. The major types of nursing personnel are prepared for their functions in a variety of education programs as shown in table 39.

Both the basic degree and the diploma programs prepare nurses for their first positions, the degree programs giving graduates the advantage of more general education and earlier accessibility to advanced study. The completion of a diploma program usually entitles a graduate to transfer credit to a college or university toward a bachelor's degree. The amount of transfer credit granted to graduates of the diploma programs varies, depending upon the quality of the school from which they were graduated, their ability to pass qualifying examinations in some instances, and the transfer policies of the college or university to which they seek admission.

Table 39.—Educational programs for preparing nurse personnel

Program	Personnel prepared
On-job training, for persons with no preemployment training.	Nurses aides.
Practical nurse schools (1 year)	Practical nurses (or vocational nurses) and attendants.
Basic diploma programs in hospital nursing schools (3 years).	Registered nurses.
Basic degree programs in colleges and universities (4–4½ years).	Registered nurses with bachelor's degree.
Supplementary programs for graduate nurses without degrees.	Registered nurses with bachelor's degree.
Advanced programs for graduate nurses with bachelor's degrees.	Nurse teachers, administrators, etc., with master's or doctor's degrees.

Enrollment data for basic diploma and degree programs are given in table 40.

At each count there are slight variations in the number of schools as some schools are closing and others are opening. Schools of nursing are attracting approximately 7 percent of the annual female high-school graduates. Men students constitute less than 1 percent of the total enrollment. Generally speaking, the men students are in coeducational schools, although a very small number of schools admit men only.

Enrollment data for practical nurse schools and for advanced programs for graduate nurses are included in sections on these programs.

Table 40.—Schools of nursing offering diploma and de programs and students enrolled, as of January 1, 1946-5

Year	All programs		Diploma program		Degree	
	Number of schools	Number of students	Number of schools	Number of students	Number of schools	N
1946	1,271	128,828	1,100	121,654	171	7,1
1947	1,253	106,900	1,076	101,425	* 177	5,
1948	1,245	91,643	1,062	85,597	183	6,6
1949	1,215	88,817	1,026	82,182	* 189	6,
1950	1,190	97,903	995	89,420	195	8,
1951	1,170	102,509	974	93,325	* 196	9,1
1952	1,155	101,809	957	90,888	198	10,
1953	1,135	101,070	936	88,359	199	12,7

[1] About half of the schools offering degree programs also offer dip programs.

* Estimated.

Source: 1951 and 1953 *Facts About Nursing*, New York, N. Y., Ameri Nurses' Association. Hawaii and Puerto Rico not included.

Practical Nurse Schools

Practical nurse education programs are developi both within and outside the vocational divisions o public school systems. Some are operated b hospitals, and a few have been developed in instit tions of higher learning. About 300 schools off training for practical nurses. In October 1953, 23 programs were conducted under public vocation education in 40 States, Hawaii, and the District o Columbia. The recommended curriculum for prac tical nurses ranges from approximately 9 months t 1½ years in length, but it is predominantly 1 year Programs usually consist of elementary basi science courses combined with supervised experienc in a hospital and instruction in nursing provided b professional nurse teachers. The Office of Educa tion, with the cooperation of a committee represent ing nursing and other national professional organiza tions, published *Practical Nurse Curriculum* in 1950 This publication based on a previous analysis o activities of practical nurses has served as a guid for the development of educational programs.

The National Association for Practical Nurs Education (NAPNE) has proposed standards fo practical nurse education and publishes a list o schools for practical nurses which meet these stand ards. Of the 303 practical nurse training program on the most recent list, 251 were approved by Stat Boards of Nurse Examiners and 52 by NAPNE Not all States have nurse practice acts which plac the responsibility for supervision of practical nurs education in the State boards of nurse examiners. Some forward-looking schools in these jurisdictions have sought the aid of NAPNE in setting up sound programs.

The estimated number of practical nurse students graduating each year from schools offering systematic training is about 9,000. Several proprietary schools for practical nurses are producing an unknown number of so-called practical nurses whose preparation is questionable.

Basic Diploma Programs

All basic diploma schools, frequently called hospital schools, now provide instruction in the major sciences related to nursing—chemistry, microbiology, human anatomy and physiology, sociology, and psychology—and clinical instruction and experience in medical, surgical, obstetric, and pediatric nursing. Schools frequently secure instruction in biological, physical, and social sciences from nearby institutions of higher education. Most schools also provide instruction and experience in psychiatric nursing. Many have added training for nursing in communicable diseases and tuberculosis. Experience in community agencies, such as nursery schools, rehabilitation centers, clinics, institutions for the chronically ill, the aged, and the convalescent, is offered by some schools. The schools vary greatly in the amount, quality, and correlation of instruction in the various fields. Many barely meet minimum requirements; some exceed them.

The diploma programs offered by the hospital schools of nursing and by a few colleges and universities are typically 3 years in length. Some believe that these programs are too long, that they contain unnecessary duplications in both theory and practice. During World War II, faculties in schools of nursing, by eliminating duplications, were able not only to accelerate the program to 2½ years for all required theory and practice, but also to strengthen it by providing additional educational experiences in such fields as psychiatry, communicable diseases, tuberculosis, and outpatient and community nursing.

A school of nursing in Canada has experimented with a 2-year curriculum. A few schools in the United States are experimenting with a 2-year curriculum in junior or community colleges. Conclusions drawn from these experiments may be available in 1955. Other experiments are needed. Adjustments in nurse practice acts, which in many States require completion of 3-year programs for eligibility for registration, will be necessary if a shorter program is found effective for general applicability. Some State boards of nurse examiners are already setting up special provisions for licensing graduates of experimental programs.

Basic Degree Programs

Degree programs for nurses have been developing slowly, but steadily. There is great variety in the length, content, and arrangement of academic courses and of clinical experience and in the type and value of the degree awarded in terms of admission to master's level work.

Biological and social sciences, humanities, and professional instruction and a variety of clinical experiences compose the program. In the best programs a major in nursing is provided, and instruction in the last 2 years, usually clinical, is at the senior-division level. While the clinical experiences in degree programs include the same major divisions of hospital practice as diploma programs do, instruction should be built upon the more extensive science foundation which the degree candidate possesses. Degree programs usually include a wider variety of experiences, particularly extrahospital. Some qualify their graduates for public-health nursing, which would entail additional study for the graduates of the typical diploma school.

In some schools, students are admitted to a hospital diploma program after 2 academic years of college courses with varying amounts of prenursing content. These students continue their education for 3 years with other students who are admitted with or without previous college experience. This

Table 41.—*Student nurses admitted and graduated annually, diploma and degree programs, 1945–53*

Year	Students admitted	Students graduated
1945	56, 567	31, 721
1946	30, 899	36, 195
1947	38, 210	40, 744
1948	43, 373	34, 268
1949	43, 612	21, 379
1950	44, 185	25, 790
1951	41, 667	28, 794
1952	42, 103	28, 782
1953	[a] 42, 945	----------

[a] Committee on Careers, 2 Park Ave., New York, N. Y., Feb. 26, 1954.

Source: 1951 and 1953 *Facts About Nursing*, New York, N. Y., American Nurses' Association.

practice is of doubtful educational soundness. Both groups end their experience at the same time, one group with a degree, the other with a diploma. Some programs of this type have been condensed from 5 to 4½ or 4 (usually calendar) years.

Of growing interest is a 4-calendar-year curriculum which integrates liberal arts and professional education throughout the 4 years. Such a curriculum has many obvious advantages, and it is hoped that more institutions of higher learning will be able to adopt it.

There are two university programs in basic nursing—the one at Yale University, and the other, one of the two programs at Western Reserve University—which require a baccalaureate degree for admission.

Two new varieties of degree programs should be described in addition to those already mentioned. The first is a new type of degree and diploma program combined. The first year is spent at the college, and introductory nursing courses are included with academic work. The next 2 calendar years are spent in clinical instruction and practice at various participating hospitals. The student may then elect one of two plans: (1) She may take State board examinations and practice as a graduate registered nurse, returning later without loss of credit to complete her degree; or (2) she may return to the college for another calendar year of academic and professional preparation, obtain a baccalaureate degree, and qualify for the State examination. The second proposed new degree program is one which will award a degree after 4 academic years rather than 4 calendar years of study.

About 150 colleges and universities offer basic degree programs for nurses. One-third of these institutions admit degree candidates only, and these schools had half of the total degree enrollment in 1950. The other institutions offer diploma programs as well as degree programs, but in them the candidates for diplomas outnumber the candidates for degrees.

Nursing education programs must produce more potential teachers and leaders. The National Committee for the Improvement of Nursing Services has estimated that a minimum of 25 percent of the national nurse pool should have at least a baccalaureate degree if employer demands for nurses with this type of preparation are to be met. Increases in enrollments of basic degree programs and expanded opportunities for graduates of diploma programs to secure supplementary education leading to a degree are necessary to help close this gap. Mem
both groups would then be ready after some
ience to seek graduate preparation for ad
special positions.

Supplementary Prespecialization Programs

Nurses who are graduates of diploma pr
may seek bachelor's degrees by enrolling in
and universities which grant them varying a
of transfer credit for their basic nursing edu
Generally speaking, the universities which off
nursing programs leading to the baccalaureate
provide opportunity for nurses with diplomas
degrees by supplementing their professional
tion and securing additional general education
versities offering programs leading to the m
degree sometimes allow these nurses to en
general education courses on the bachelor's le
some of the advanced professional courses, th
ing levels of students in these latter courses.
has frequently created morale problems for
and students.

When a nurse from a hospital school ente
lege or university which has neither a basic
advanced program in nursing, she is likely to f
of two situations. In one situation she mus
plete a major in a field other than nursing, re
a smaller amount of credit for her basic diplo
gram. In the other situation she is permitted
her nursing education as the major. This me
that the institution gives credit for a major co
in an institution over which it has no contr
(2) that the student receives a degree for th
pletion of two halves of a program both of whi
represent predominantly lower division rank.

Advanced Programs

The nature of supervisory and administra
sponsibility for nursing service in all fields of e
ment is such as to warrant graduate prepa
While the percentage of the nurses in such p
who have completed advanced programs of s
still small, it has been steadily increasing in
decade. Nurses who teach in the various t
nursing schools need advanced degrees. R
in nursing and consultation work in the gene
special fields of nursing also call for highly p
nurses. Except for graduates of the 18 basic
programs which prepare for public health
nurses who wish to enter public health nursi
additional preparation.

More than 100 universities and colleges of plementary or advanced programs for graduate nurses. Thirty-three of the universities offer programs with emphasis on special fields of nursing that lead to a master's degree and some to the doctorate. During the academic year 1951–52, baccalaureate degrees were earned by 1,900 graduate nurses, master's degrees by 498, and doctoral degrees by 3.

The total number of graduate nurses enrolled in these programs in 1952–53 was 11,077. Of this number, 3,101 were enrolled for full-time study (12 hours or more) and 7,976 for part time study, usually while employed in full- or part-time positions. The number of full-time students should be greatly increased if urgent needs are to be met.

Research

Research in nursing is going on in many areas. Three problems are receiving emphasis: Nursing education, particularly the curriculum; administration, including clarification of function of various types of nursing personnel; and nursing practice techniques. An important step in the improvement of nursing is a $1½ million research program for the study of nursing functions, sponsored by the American Nurses' Association and financed by funds collected from nurses and allocated by ANA through State nurses' associations.

The Division of Nursing Resources, Public Health Service, has assisted States and individual institutions in studying their nursing resources and needs and in making long-range plans to improve the supply and quality of nurse personnel. This and other Divisions of the Public Health Service, as well as other agencies inside and outside Government, have carried on studies aimed at formulating methodologies for general use.

The National League for Nursing with cooperation from the Public Health Service and with a representative advisory committee, is studying costs of nursing education in a small number of colleges and universities. This is being done with a view to preparing a manual which will enable many universities to make the analyses of their costs which are essential to decision and policy formation.

Applications of principles from the social sciences in many studies are apparent. Controlled experimentation in both nursing services and nursing education can be found in many centers. Other studies are being made in universities and hospitals, some with assistance from the foundations and under Government grants.

A new journal called *Nursing Research*, which has just been established by the nursing organizations, reports selected studies. It is published three times a year by the American Journal of Nursing Company.

Regional Planning

A significant development in nursing education is that of regional planning to provide the nursing resources needed for all types of service. Much of this planning is on a statewide basis, some is on a regional basis combining several States, and some is in areas within a State. It involves a determination of the number of nurses, their qualifications, and distribution among types of employment, and an estimate of the numbers of each category of nursing personnel needed by field of service now and at some future date. This activity encourages schools to make a long-range plan for adapting the educational system for recruitment and preparation of the number of nurses needed.

State committees representing statewide organizations have made surveys and plans in 33 States, most of them with consultation from the Public Health Service. Statewide planning should precede the establishment of new educational programs particularly basic degree programs, to determine the need for additional schools and the availability of candidates for admission.

Regional planning (several States) is indicated particularly for the establishment or revision of offerings of advanced programs. A single institution can maintain faculty and facilities for all specialties in nursing only at great expense. Several universities can plan an apportionment of the various programs among them to great advantage to themselves and to professional progress in nursing.

Some Current Educational Problems

Some of the problems that confront nursing education have been indicated in the preceding sections of this chapter. Several others should also be mentioned.

The development of adequate teaching staffs for the schools of nursing is a matter of much concern. Many important teaching positions are unfilled. Somewhat more than half of the instructors in schools of nursing hold academic degrees. In 1950, approximately 50 percent had bachelor's degrees and about 10 percent master's degrees.

Nurses in the other positions—supervisory and administrative—for which advanced preparation is desirable also lack needed educational background. The majority of nurse teachers, administrators, and clinical specialists are graduates of the diploma programs. As graduate nurses they have had to spend 2 to 3 or more years taking additional professional and general education courses to meet requirements for their first degree. With 90 percent of all student nurses entering diploma programs, much of the nurse leadership in the future will continue to come from this source. Such an educational pattern is extremely costly both to the nurse and to society. Overcoming the barriers which limit enrollment of prospective nurses in sufficient numbers in basic degree programs is of the utmost importance. Young women in college who would welcome the opportunity to prepare for nursing if they and their parents understood its appeal should be steered into established degree programs in nursing. Graduates of liberal-arts colleges find challenging opportunities to study for a profession in the nursing schools of the country and find practice of the profession a satisfactory and rewarding way of life.

Encouraging progress is being made in adding to nurse training some essential experience in such fields as psychiatry, tuberculosis, communicable diseases, and others. To these must be added care of the aged and chronically ill.

Efforts to recruit students for all types of schools have been vigorous in the last decade. A federally aided emergency program during World War II resulted in a greatly increased number of admissions. Since the war, however, the desired number of new students has not been admitted. Although approximately 43,000 have entered schools of nursing each year since 1948, only about two-thirds of this number are graduated. Graduate nurses withdraw from active nursing at the estimated rate of 6 to 8 percent annually. It is estimated that 58,000 students would have to be admitted annually to basic degree and diploma schools to produce the number of graduate registered nurses needed currently and to reach the estimated goal for the next few years. An extensive program of scholarships would greatly assist in the recruitment effort.

Schools of nursing of all types, like other institutions of higher education, are in a critical financial situation. Diploma programs are supported by hospitals whose principal source of income is payments by patients or on their behalf. Student nurses, through service to hospitals, make a variable but considerable contribution to the cost of their education. These sources of support are inadequate, and reliance upon them is largely responsible for financial plight of nursing education. Degree p grams are often financed only in part by the coll or university; hospitals contribute additional s port. All types of nursing education should ha stronger community support than they now posse

Among the additional problems now confronti nursing education are: (1) Further pooling of educ tional and clinical resources to provide a small number of larger and better diploma programs wit out decreasing the supply of graduates from the programs; (2) increasing the control over clinic experience for educational purposes; (3) improvi the counseling of applicants for nursing educatio to insure selection of the most appropriate progra for each student; and (4) enriching the basic cu riculum in nursing with general education, partic larly in the social sciences.

The rapidly growing opportunities for givi scientific care to patients, for communicating th principles of healthful living including those c mental health to patients, families, and communitie in this country and in many other countries mak nursing an attractive profession for young wome and men. The rich possibilities of continued deve opment of administration, education, research, con-sultation, and journalism in the many fields of nu-sing guarantee professional advancement to those nurses who wish it and who prepare themselves fo it. Educators, particularly those in higher educa tion, can render service of high social value by the understanding of the modern concept of nursing a its scientific foundation and by their interpretatio to their colleagues, the public and potential cand dates of the challenges nursing presents to the live intelligence and spirits of students.

Schools of Nursing

A list of State-approved schools of nursing, bo those offering diploma programs and those offeri degree programs, can be secured from the Commi tee on Careers in Nursing, 2 Park Avenue, Ne York, N. Y. The list is coded for type of progra and accreditation status.

A list of colleges and universities offering progra for graduate nurses leading to either a bachelor's o a master's degree was published in the Decembe 1953 issue of *Nursing Outlook*. A reprint can be h on request from the National League for Nursing, Park Avenue, New York, N. Y.

A list of State and nationally approved schools o practical nursing may be obtained from the Natio

Association for Practical Nurse Education, 654 Madison Avenue, New York, N. Y.

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19. Occupational Therapy Education

By MARTHA E. MATTHEWS, O. T. R.*

OCCUPATIONAL THERAPY, briefly stated, is medically prescribed treatment to facilitate the recovery or rehabilitation of the mentally or physically ill patient of all age groups. As a member of the para-medical group, it is under the direction of the physician who specifies the results desired and the precautions to be noted for each treatment. The occupational therapist, as a professionally trained person, usually selects an activity (creative and manual arts; activities of daily living; recreational, educational, and industrial activities) as a means of providing the designated treatment. The training of therapists is acquired largely through colleges and universities.

The Profession

Down through the centuries, "work," "occupations," or "activities" have been noted as forms of treatment for persons in need of therapy and rehabilitation. In 1917, however, the first professional organization was established. Through the succeeding years occupational therapy was developed, and it received considerable impetus from World War II. Even though its inception was in the psychiatric field, occupational therapy has developed an equally important role in other medical fields, including rehabilitation of the physically disabled. The consideration of its effect upon the whole person while a specific condition was being treated has always been primary. The conditions most often treated include tuberculosis, mental illness, rheumatic fever, cerebral palsy, injuries due to accidents or war, and cardiovascular and metabolic disturbances. Prescribed treatment for these and other illnesses may be administered in hospitals, rehabilitation centers, sanatoriums, orthopedic schools, homes, or sheltered workshops.

In 1953 there were 3,800 registered occupational therapists, of whom 2,700 were engaged in practice. On the basis of the projected requirements of Armed Forces, Public Health Service, Veter Administration, and the 6,000 hospitals surve by the American Hospital Association, it is estima that 8,000 additional therapists will be needed 1958. As new emphases in medicine occur, a in demand for occupational therapists follows. example is the increased number of requests wit the past year for therapists with special training the cerebral palsy field.

The professional association was formed in 1 with the title of the National Society for the Pro tion of Occupational Therapy. About 5 years lat its present name, American Occupational Thera Association, was adopted. In 1953, 35 State and gional associations were affiliated with this natio organization. The official organ is the bimonth *American Journal of Occupational Therapy*, which supplemented by a monthly *Newsletter*. The *Oc pational Therapy Yearbook* includes a directory registered occupational therapists, a geographi list of institutions and centers having occupatio therapy departments, and other pertinent inform tion. The national headquarters are housed 33 West 42d Street, New York 36, N. Y.

There are no State license laws for occupatio therapy. The American Occupational Therapy sociation formulates and administers a natio registration examination which is recognized throug out the United States. Graduates of accredit schools, upon successfully writing this examinatio are qualified as registered occupational therapists a are listed in the national register. They use t designation O. T. R. after their names. Intern tional reciprocity has been extended to graduates the 17 occupational therapy schools now operati in 10 foreign countries.

Education

Among the first experimental training progra in occupational therapy were the courses carried at the Adams Nervine Hospital, Boston, in 1906 (for nurses) and the Favill School of Chicago in 1908. In 1913 Milwaukee-Downer College established a similar course in "invalid occupations," which is carried on today by the Department of Occupational Therapy. During World War I the Surgeon General ordered the establishment of 3-month emergency training courses to prepare the 200 reconstruction aides requested by General Pershing for the European military hospitals. As an outgrowth of this movement, three of the present-day schools emerged. In 1944 the last of the hospital schools ceased to exist as such and became parts of accredited colleges.

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The national association has conducted two surveys (1947, 1952) of the accredited occupational therapy schools to ascertain the curricular pattern, capacity, and teaching and space needs. A comparative study was also made to determine the relationship between the type of techniques taught in the schools and those used in general practice of occupational therapy. From a survey of the school and clinical programs, three manuals[1] were developed to assist in standardizing occupational therapy education and training.

The American Occupational Therapy Association has a Committee on Education. Within the Committee is a subcommittee on Schools and Curriculum, and the director of each of the approved schools is a member. This group, which is very active, meets semiannually. It is responsible for the preparation and revision of teaching materials, notably the *Curriculum Guide.* It is reviewing curriculums at present to determine whether and where the training program can be shortened. It also submits recommendations to the Council on Medical Education and Hospitals of the American Medical Association for revision of the Essentials of an Acceptable School of Occupational Therapy.

Accreditation

In 1923, the American Occupational Therapy Association first formulated and put into effect minimum requirements for the training of occupational therapy students. This practice was continued until 1935, when the Council on Medical Education and Hospitals of the American Medical Association, at the request of the American Occupational Therapy Association, assumed responsibility for inspecting and accrediting occupational therapy schools. The present minimum standards, which have been officially approved by both associations, are set forth in the Essentials of an Acceptable School of Occupational Therapy. There are now 27 approved schools.

Schools and Enrollment

The first occupational therapy courses were instituted in hospitals or art schools. However, after 1923, all new courses were established in colleges or universities accredited by their respective regional associations of colleges and secondary schools. The various university or college divisions in which the professional curriculums are offered are: Education, arts and science, medicine, and occupational therapy. The combined capacity of the schools is 3,100 students. The enrollment in the fall of 1953 was 2,570.

Table 42.—Occupational therapy schools and graduates in specific years

Year	Number of schools	Number of graduates	
		Men	Women
1917–19	[1] 5	0	100
1942	5	0	151
1946	[2] 20	0	864
1950	24	8	383
1952	27	119	341

[1] Exclusive of 10 or more war courses which were later discontinued.

[2] Includes 7 war emergency courses.

Admission Requirements, Curriculums, and Degrees

Admission requirements are governed by the level of the occupational therapy course. High-school graduation without specified unit credit is generally adequate to enter the degree program on the freshman level. When a transfer is made on the junior level, courses in biologic or physical sciences, psychology, and sociology are required. For the certificate course, a bachelor's degree with credits in the same subjects as for a transfer student is necessary. The individual schools very frequently have other specific requirements as stated by the college or university in which they are organized.

Three types of occupational therapy programs have evolved since the original course was offered. The certificate course was initiated to meet the need of the person having a bachelor's degree, or a nursing or related professional background. The degree course makes it possible for the undergraduate to enter in the freshman year or to transfer to it at the junior level. The diploma course, a 3-year curriculum which was the first college program offered, is fast being discontinued, since a degree is awarded for an additional academic year.

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[1] *Curriculum Guide*, 1946. 113 p. *A Director's Guide for a Clinical Training Program*, 1948. 16 p. *Manual for Occupational Therapy Students in Clinical Training*, 1948. 34 p. All are published by the American Occupational Therapy Association.

Of the present 27 schools, 25 confer baccalaureate degrees in occupational therapy and 2 award certificates of proficiency. Many schools offer multiple programs; 11 offer both a bachelor's degree and a certificate; 1 school offers a B. S. and a diploma course; and 2 schools offer 3 programs, namely, degree, certificate, and diploma. The degree courses require 4 years of academic study followed by a minimum of 9 months of internship or clinical practice. The certificate program can be completed in one academic year followed by the minimum of 9 months' clinical practice.. In both programs, the combination of professional techniques along with the liberal arts curriculums of the individual schools provides a broad educational background for the therapist.

The basic curriculum includes biologic, physical, and social sciences. The professional curriculum embraces such sciences as anatomy, physiology, kinesiology, neurology, and psychology; clinical subjects such as orthopedics, tuberculosis, general medicine and surgery, pediatrics, psychiatry; the theory and application of occupational therapy to the various disabilities; and techniques in the use of the various mediums such as arts, crafts, education, recreation, and activities of daily living.

Postcollege Study

There are three graduate programs specifically planned for occupational therapists; all of them lead to the master of arts degree.

Postcollege courses not leading to degrees are conducted by hospitals, universities, or both through utilization of their combined facilities. They include the most recent medical information on, and occupational therapy techniques for, treating a given disability and extend from a few weeks to six months. Those frequently offered are on cerebral palsy, psychiatry, poliomyelitis, and rehabilitation. There are also advanced courses offered in anatomy and kinesiology.

Current Educational Problems

As in many other professions, in occupational therapy there is a shortage of trained persons. T
continually developing medical program is acco
panied by the creation of many new positions in
auxiliary services. The length and expense of
occupational therapy training program make
difficult to meet the requests for personnel beca
many potential candidates cannot afford the nec
sary financial outlay. The trend to subsidize edu
tion and specialized training is evident. Unless
interested student is able to obtain a scholarship
fellowship, he will frequently turn to a program th
offers such assistance.

The second problem is closely related both to t
preceding one and to conditions in other fields. T
salaries for school instructors are not sufficiently hi
to attract the skilled teachers who are needed. T
crux of the situation, then, is adequate financial pr
vision for student scholarships and for higher salari
for teachers. The alternative to reduce occupation
therapy educational standards in order to less
student expenses has been strongly rejected. In
age of higher rather than lower educational requi
ments, those of the occupational therapy professi
will continue to maintain adopted standards a
strengthen them.

Schools of Occupational Therapy

The following are the schools in the United Stat
which are approved by the Council on Medical Ed
cation and Hospitals of the American Medical Ass
ciation for instruction in occupational therapy. Th
figures indicate the enrollments in the fall of 1953.

CALIFORNIA

Mills College, 17.
San Jose State College, 192.
University of Southern California, College of Letters, Arts a
Sciences, 86.

COLORADO

Colorado Agricultural and Mechanical College, School of Ho
Economics, 96.

ILLINOIS

University of Illinois, College of Medicine, 105.

IOWA

State University of Iowa, College of Liberal Arts and Colle
of Medicine, 68.

KANSAS

University of Kansas, School of Fine Arts, 108.

MASSACHUSETTS

Boston School of Occupational Therapy (Affiliated with Tu
College), 133.

MICHIGAN
Michigan State Normal College, 106.
Wayne University, School of Education, 99.
Western Michigan College of Education, Kalamazoo School of Occupational Therapy, 228.

MINNESOTA
College of St. Catherine, 83.
University of Minnesota, School of Medicine, 116.

MISSOURI
Washington University, School of Medicine, 56.

NEW HAMPSHIRE
University of New Hampshire, College of Liberal Arts, 70.

NEW YORK
Columbia University, College of Physicians and Surgeons, 71.
New York University, School of Education, 112.

OHIO
Ohio State University, College of Education, 94.

PENNSYLVANIA
University of Pennsylvania, School of Auxiliary Medical Services, 92.

TEXAS
Brooke Army Medical Center, Medical Field Service School, School of Occupational Therapy, 34.
Texas State College for Women, 85.
University of Texas, Medical Branch, 0.

VIRGINIA
College of William and Mary, Richmond Professional Institute, School of Occupational Therapy, 97.

WASHINGTON
College of Puget Sound, 83.

WISCONSIN
Milwaukee-Downer College, 81.
Mount Mary College, 99.
University of Wisconsin, School of Medicine, 159.

Total enrollment, 2,570.

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20. Education in Optometry

By H. W. HOFSTETTER*

EDUCATION in optometry in the United States is carried on in 12 colleges and universities. Accreditation of the schools and colleges of optometry is made by the Council on Education and Professional Guidance of the American Optometric Association. The principal developments in optometric education have occurred since 1900.

The Optometry Profession

The optometrist is recognized as a general practitioner in the field of vision, excluding only the purely medical and surgical aspects of eye care. Even in the latter phases he assumes a degree of responsibility for detecting the need for medical and surgical care and for making referrals. This general practice concept has developed gradually and consistently from the earlier concept that the optometrist was a specialist handling only the refractive aspect of eye care. This development is natural, as the services related to refracting represent by far the greatest single group of visual services reaching the people. The same development in turn produced a need for more comprehensive training. Likewise it has led to the development of specialties within optometry. Four major practicing specialties are now given formal recognition by the American Academy of Optometry. They are (1) orthoptics and visual training, (2) contact lenses, (3) aniseikonia, and (4) industrial or occupational optometry.

Optometry has consistently confined its services to the field of visual science. Occasionally there has been speculation on the feasibility of expanding optometry to include all types of sensory aid instead of limiting it to visual aid, but in every instance it either has not met with general acceptance or has been annulled by declarations of professional policy.

The history of optometry dates from about 1300, when spectacles were invented, and follows through with the formation of opticians' guilds throug Europe and parts of Asia during the succee centuries. The invention of the movable- printing press, later followed by the expa programs in public education and the indus ization of workers, gave rise to a tremendous for visual services.

The limited services of simple spectacle fi were first provided by the spectacle makers, kn as opticians. The developing complexities ramifications of this service gradually brought a a division of the workers into two groups, t who refracted (examined) the eyes, and those continued as the makers of spectacles. Those refracted were for a long time known as refra opticians, but in time they came to identify t selves as optometrists. In the latter part of 19th century, physicians also began to enter field of refraction, including such service a auxiliary to medicine and surgery. These been identified as oculists and ophthalmologis

There are approximately 22,000 optomet registered in the United States. (See table

Table 43.—Registered optometrists in the United States, 191

Year	Number [a]	Year	Num
1915	[b] 15,667	1944	[c] 1
1920	[b] 16,422	1946	[c] 1
1925	18,216	1948	2
1930	19,458	1950	2
1935	18,768	1952	2
1940	19,734	1954	2
1942	[c] 19,964		

[a] Because many optometrists are registered for licensure in more State, these figures exceed the actual count. This may represent an approximately 10 percent.

[b] Incomplete count, due to lack of registration provisions in several St

[c] Includes about 1,500 in military service, not necessarily acting as etrists.

Source: Compiled from the *Journal of the American Optometric Ass* and *The Bluebook of Optometrists* (Chicago, Professional Press).

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*Professor and director, Division of Optometry, Indiana University; formerly president, Association of Schools and Colleges of Optometry.

slightly less than this number are actually practicing. This provides an average population of about 8,000 to each optometrist.

The present supply of graduates is regarded as considerably less than the number needed for replacement. In 1943 the American Optometric Association recognized the need for greater replacement numbers and set up an office of student procurement, subsequently called the office of vocational guidance, to apprise young men and women of the opportunities in the field. The office is accomplishing its function largely through distributing pamphlets and articles to vocational guidance personnel, librarians, teachers, and other agents and agencies responsible for advising and informing prospective students of possible careers.

Organization of Practitioners

The representative organization is the American Optometric Association, with which the associations of the individual States are affiliated by delegated representation. Provision is made also for representation of optometrists in the Provinces of Canada and optometrists in outlying Territories of the United States. It was founded in 1897 and concerns itself with virtually all aspects of the profession, including such matters as policymaking, professional and public relations, accrediting of optometric education, professional economics, professional standards, and encouragement of research. The association maintains headquarters at 4030 Chouteau Avenue, St. Louis 10, Mo. It publishes the *Journal of the American Optometric Association*, started in 1929.

Another organization, the American Academy of Optometry, concerns itself primarily with the promotion of optometric education and research, and limits its membership to those meeting only the highest standards of professional practice and educational qualification. The academy was organized in 1922. It has members in several countries.

Licensure

In 1901 the first State law regulating the practice of optometry was passed in Minnesota, and by 1924 such laws had been enacted in every State and the District of Columbia. All States and the District of Columbia have optometric examination and registration boards to supervise the examination, licensing, and registration of optometrists.

The original enactment of optometry laws in the various States resulted in an initial registration and licensing of large numbers of men and a few women with varying degrees of training and experience who saw an opportunity to acquire professional licensure without examination, that is, by simple declaration of optometry as a livelihood. At present, in order to obtain a license, the graduate in optometry must take a State board examination covering the regular subjects included in his training. Except under provisions of reciprocity between States or upon acceptance of the National Board Examination, the candidate must take the examination offered by the State in which he plans to practice. Statistics showing the utilization of the recently established National Board in lieu of individual State examinations are not yet available. It may be said that virtually no reciprocity occurs, though most States have statutory provisions for it. For the most part the profession has not favored lenient provisions for reciprocity, and since the demands are relatively few it seems to have been administratively easier to require reexamination where requests for reciprocity have occurred.

The examining and licensing boards of the United States and Canada are represented in the International Association of Boards of Examiners in Optometry. This organization was informally organized in 1913 as the International Board of Boards and acquired its present official status and title in 1919. It concerns itself with the various problems and policies of licensure and examination in the individual States and Provinces.

In 1951 the International Association of Boards of Examiners in Optometry in cooperation with the Association of Schools and Colleges of Optometry established the National Board of Examiners in Optometry to provide nationwide examinations of graduates of optometry schools. This board is patterned to a large degree after the national boards in several other professions. It is not a licensing agent, but its certification is accepted in various States in lieu of individual State board examinations.

Development of Education

The drifting away from apprenticeships and the development of formal schools and colleges of optometry in the United States began about 1900. The early development of schools coincided approximately with the enactment of laws regulating the practice of optometry.

Prior to 1900, optometric training was obtained in a variety of privately owned training clinics, with a usual attendance time of from 2 months to 2 years of 6 months each. The best estimates indicate that at least 60 such schools or clinics were then scattered throughout the United States.

Columbia University in 1910 offered the first university program in optometry. Ohio State University followed in 1914, the University of California in 1923, Pacific University in 1945, University of Houston in 1952, and Indiana University in 1953.

These university-affiliated schools represent half of the present total number of institutions teaching optometry. Until about 15 years ago the typical university optometry curriculum deemphasized the clinical and professional aspects of optometric training, and emphasized instead the academic aspects of optics as a pure science, with a supplementary education in the basic biological and physical sciences and the humanities. This idea was generally carried out even in the degree conferred, usually an academic baccalaureate degree coupled with a certificate of completion of the optometry curriculum.

In recent years there has been considerable revision of the several university optometry curriculums. With the lengthening of the curriculum and with the changes in administrative organization to provide for emphasis on the professional aspects of the program, a pronounced enthusiasm for university affiliation has developed. At the same time the division of the curriculum into optometric and preoptometric training has preserved the university tradition of an ample supply of the basic sciences and cultural subjects in the program of optometric education.

Most of the present nonuniversity schools and colleges of optometry originated as privately owned enterprises. One by one they acquired nonprofit charters under the control of nonbenefiting boards of trustees. Certain of these schools have indicated the desire to affiliate with universities. Three of the earlier private schools ceased operations in deference to the undertaking of optometric teaching by local universities.

From the beginning, the independent schools have emphasized the clinical and practical aspects of optometry. With the lengthening of the curriculum they have recently added more of the basic sciences, especially in physiological and psychological optics. To a large extent the lengthening of the program in independent schools has consisted in increasing preoptometry requirements. Hence, the difference between training in the independent schools and the university-affiliated schools is decreasing.

Educational Association

The 12 schools and colleges of optometry in
United States and the 2 in Canada are represen
in the Association of Schools and Colleges of
tometry. This association was formally organi
in 1940 as the successor to the earlier Internatio
Federation of Optometry Schools, which
periodically but without formal organization dur
the two decades prior to 1940.

Accreditation

Through the combined efforts of the Ameri
Optometric Association, the International Associat
of Boards of Examiners in Optometry, and the In
national Federation of Optometry Schools,
siderable standardization and improvement
curriculums was accomplished. This was acc
panied by a gradual reduction in the number
schools given general professional recognition.

In 1925 a joint committee was appointed to sur
and inspect the 30 remaining schools for the purp
of accrediting and rating them. Six were given
A rating, 2 were given a B rating, and 1 was gi
a C rating. The other schools closed almost imm
diately. By 1936 the schools were offering 4-y
programs and required graduation from an accredi
4-year high school for admission. The Council
Education and Professional Guidance of the Am
can Optometric Association was formed and assig
the responsibility of accrediting the schools
colleges of optometry. In 1941 the council liste
accredited schools and subsequently added 3 mo

At present 11 of 12 schools are regularly accredit
the other is so new as to have its application
accreditation still in process.

Schools and Enrollments

The schools and colleges of optometry increa
from 7 in 1940 to 12 in 1953. These instituti
are found in 10 States and are well distribu
throughout the Nation. The total enrollm
reached a peak of almost 4,800 in 1948, but
since declined. (See table 44.) A large part
the enrollment increase was due to the gradual leng
ening of the curriculum during the period represent

The Optometry Curriculum and Degrees

In every school the optometry curriculum rep
sents a minimum 5-year program following hi
school graduation. Some of the 5-year progra
consist of 1 year of preoptometric and 4 years
optometric study, while others are divided int

Table 44.—Enrollments in schools and colleges of optometry, 1930–53

Year ending—	Professional under-graduate students	Postgraduate and special students	Total
1930[1]	458	0	458
1940[1]	2,460	5	2,465
1941	1,506	9	1,515
1942	1,473	8	1,481
1943	897	0	897
1944	695	13	708
1945	1,025	10	1,035
1946	2,702	23	2,725
1947	3,935	25	3,960
1948	4,762	16	4,778
1949	4,090	26	4,116
1950	3,306	26	3,332
1951	2,463	37	2,500
1952	2,310	63	2,373
1953	1,953	91	2,044

[1] Data incomplete.

Source: Compiled from reports of the schools and colleges of optometry submitted to the Office of Education. For years previous to 1948, data from unaccredited and subsequently discontinued institutions are not included.

years of preoptometry and 3 years of optometry proper.

One of the schools has announced its plans to begin a 6-year program in 1955, to consist of 2 years of preoptometric and 4 years of professional courses. Another school has announced tentative plans to go to a similar 6-year program. The question of the need and desirability of a 6-year curriculum was the major topic of discussion in the June 1954 meeting of the Association of Schools and Colleges of Optometry.

For purposes of analysis the typical optometry program may be subdivided into three general groups of courses: The general science and cultural courses; the basic sciences germane to optometry; and the applied and clinical optometric courses. Chronologically, these divisions overlap and dovetail considerably. The first group is largely taken care of in preoptometric work in courses in mathematics, physics, psychology, biology, chemistry, and the humanities. In the first year in the upper division, or optometry proper, the student takes the basic science courses more closely related to optometry, such as anatomy, pathology, and physiology of the eye; physical and geometric optics; physiological and psychological optics; and illumination. Not so clearly identified with one group or another are such courses as genetics, statistics, neurology, psychophysics, experimental psychology, and clinical psychology, usually with emphasis on vision. Further along in the program the third group is represented by courses in practical and clinical optometry, applied ocular pathology, subnormal vision, orthoptics and visual training, occupational vision, dispensing, ophthalmic and mechanical optics, and professional orientation courses such as practice management, jurisprudence, and the socioeconomic aspects of optometry.

The typical optometry school provides for laboratory exercises as a part of the courses in physical, geometric, mechanical, physiological, and psychological optics, and in ocular anatomy and physiology. A major part of every optometry school is its clinic. Here students do refractions, visual training, dispensing, contact-lens work, etc. Supervised experience in consultation, visual screening, and observation of pathological cases is also included as a part of the clinical training. The clinics receive their patients from surrounding communities.

Though the degrees earned in optometry vary, the great majority of graduates now receive the doctor of optometry degree. This is the degree offered by 8 of the 12 schools. Three schools offer the master of optometry degree, and one offers the bachelor of science in optometry. The degree doctor of optometric science is honorary. The number of earned first degrees reached a peak in 1949 and then declined sharply. (See table 45.)

The American Optometric Association has exerted considerable effort to standardize the earned degree doctor of optometry, to be abbreviated "O. D." The Association of Schools and Colleges of Optometry has recently unanimously endorsed the offering of the doctor of optometry as the terminal professional degree. The Council on Education and Professional Guidance of the American Optometric Association has also included the offering of the O. D. degree as one of the criteria for accreditation of new schools.

Education Beyond the First Professional Degree

Advanced education in optometry has assumed two purposes. One—graduate education—is the preparation of researchers and educators in optometry and visual science. The other—postgraduate education—is the continuous and periodic education of practitioners.

In fulfillment of the first purpose, the Schools of Optometry of the University of California and

Table 45.—Earned degrees conferred in optometry, 1930–53

Year ended—	First professional degrees	Postgraduate and graduate degrees	Year ended—	First professional degrees	Postgraduate and graduate degrees
1930[1]	208	0	1947	535	9
1940[1]	620	6	1948	1,321	10
1941	402	3	1949	1,767	64
1942	424	6	1950	1,588	87
1943	394	1	1951	1,022	14
1944	157	0	1952	610	10
1945	165	0	1953	693	16
1946	302	2			

[1] Data incomplete.

Source: Compiled from reports of the schools and colleges of optometry submitted to the Office of Education. For years previous to 1948, data from unaccredited and subsequently discontinued institutions are not included.

the Ohio State University have formal arrangements with their respective university graduate schools to provide programs of training and research leading to the degrees of master of science and doctor of philosophy in physiological optics. Up to the present time these two institutions have conferred a total of about 20 master's degrees and 10 doctor of philosophy degrees in physiological optics. With 1 or 2 exceptions all the men who have received these degrees are now on the teaching staffs of optometry schools. In addition to these, a goodly number of optometry graduates have pursued comparable graduate programs at other universities in departments of physiology, psychology, or biology and have gained their master's and doctoral degrees by working on visual projects in these fields. A number of these men have also become career teachers and researchers in optometry schools. All of these taken as a group represent the nucleus of the optometric teaching personnel of today. At the same time they represent an important segment of the research program in the field of visual science and are regularly contributing to the scientific and professional journals.

Postgraduate education—supplementary and advanced training of the practitioner—is more widespread but not so formal as graduate education. It is an outgrowth of the early optometry school which trained the optometrists in practice as well as the student preparing to practice. The earlier practitioners often completed 2 or 3 short training courses offered at different schools, with intervening periods of practice.

The wide geographical distribution of optomet
has not readily permitted the development of reg
formal postgraduate courses except in the ur
areas. In larger cities special postgraduate cou
have been conducted through local universities
colleges. These are usually offered as eve
courses. Several schools offer frequent 1-w
intensive courses for the remotely located opt
etrists. One school offers a limited amount of p
graduate work by correspondence. The Ameri
Academy of Optometry conducts a 4-day natio
educational meeting annually. It has also foste
the development of a number of affiliated l
chapters for periodic educational sessions. A
vately sponsored agency known as the Optome
Extension Program provides monthly study pa
for use as educational material. The prog
maintains a staff of traveling lecturers to
instruction to small groups. The various St
and regional associations routinely offer educatio
sessions as a major part of their regular meeti

Research

Research in visual science is identified with ma
professional and scientific fields. A significant p
of the total amount of this research is identi
directly or indirectly with optometry, either beca
visual research personnel are often originally trai
as optometrists or because the sponsorship or
couragement of the research comes from within
profession or through the faculties of optome
schools.

Financial support of research has come thro
various optometric organizations and agencies
the form of grants. Noteworthy of the efforts
the optometrists in this direction was the establi
ment of the American Optometric Foundation a
nonprofit membership organization in 1947 to ra
funds in support of research. This project
shown continuously increasing support through
few years of its existence, and it is at present und
writing continuous grants-in-aid to a good ma
graduate research projects at several schools.

Most of the optometric research is identified
research in physiological optics, a more general te
implying a broader coverage than the purely clini
and applied problems of optometry.

Principal Problems

Many of the progressive developments in opto
etry and optometric education were initiated in 19
in a history-making meeting representing almo

every phase of the profession, the First Conference To Establish Optometric Standards. At this meeting well-formulated plans were developed for the standardization of curriculums, the accreditation of schools, and the general reorganization of the profession. Probably the fulfillment of the ideas projected at this meeting was the recent establishment of the National Board of Examiners in Optometry.

In the opinion of the author a comprehensive survey of the progress of the profession might well be undertaken. Such a review or survey should be conducted or supervised by an agency or foundation outside the optometry profession and outside any other profession or group directly concerned with visual care or ophthalmic services. This study should be extensive and thorough, not only to include the educational pattern in optometry but also to analyze the role of the profession in society, its obligations, its needs, and even its economic structure. Such a study should accomplish what similar studies have accomplished for medicine, dentistry, pharmacy, and several other professional areas.

This opinion reflects the author's belief that in the remarkable progress made in the past 50 years there are both deficiencies and merits that are not easily recognized by those who are closely allied with the profession. The recognition of all these factors should be beneficial both to the profession and to the public which it serves. It should certainly aid in the design of future curriculums, in the vocational guidance of prospective students, in the preparation of optometric teachers and researchers, in the legislation of better optometric laws, and in an understandable clarification to the public of optometry's role in visual care, all of which seem to be major problems in optometric education today.

Schools and Colleges

The schools and colleges of optometry and their 1953-54 fall enrollments are shown below. The first figure indicates the undergraduate and the second, the postgraduate and special students.

CALIFORNIA

Los Angeles College of Optometry, 221, 0
University of California, School of Optometry, 98, 5

ILLINOIS

Chicago College of Optometry, 186, 12
Northern Illinois College of Optometry, 241, 0

INDIANA

Indiana University, Division of Optometry, 16, 0

MASSACHUSETTS

Massachusetts College of Optometry, 135, 13

NEW YORK

Columbia University, Department of Optometry, 181, 35

OHIO

Ohio State University, School of Optometry, 124, 6

OREGON

Pacific University, College of Optometry, 106, 4

PENNSYLVANIA

Pennsylvania State College of Optometry, 336, 1

TENNESSEE

Southern College of Optometry, 282, 8

TEXAS

University of Houston, College of Optometry, 27, 7

Total enrollment:	
Undergraduate	1,953
Postgraduate and special	91
Total	2,044

Selected References

American Optometric Association, Council on Education and Professional Guidance. *Manual of Accrediting.* St. Louis, Mo., The Association, 4th ed., 1953. 43 p.

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———, Department of Public Information and Council on Education and Professional Guidance. *Monograph on Optometry.* St. Louis, Mo., The Association, 1954. 20 p.

Hofstetter, H. W. *Optometry: Professional, Economic, and Legal Aspects.* St. Louis, Mo., C. V. Mosby Co., 1948. 412 p.

21. Osteopathic Education

By RUSSELL C. McCAUGHAN, D. O.*

OSTEOPATHIC EDUCATION, now some 60 years old, is the means by which about 450 men and women each year complete their training and begin professional service in the United States and elsewhere. The osteopathic profession takes great interest in its colleges and devotes much effort to assisting them in attaining increasingly higher educational standards.

The Osteopathic Profession

Osteopathy is more clearly understood when it is discussed rather than categorically defined. Steadily the profession has assumed its prerogative to grow, develop, and refine its earlier premises. Osteopathy is an unlimited school of medicine with a *unique* philosophy. A basic tenet of osteopathy is that the body is a unit. Though heterogeneous in its cellular, tissue, and organic structure, the human body functions as a unit in *both health and disease.* It is regulated, integrated, and coordinated in its functions principally through its circulatory and neuroendocrine systems. The osteopathic physician considers the patient as a whole and recognizes symptoms as the manifestation of reactions to noxious chemical, physical, environmental, psychological, and biological factors.

Equally basic to the concept of osteopathy is that the body possesses self-regulatory mechanisms which should not be unnecessarily neutralized. Within limits these mechanisms provide for resistance to, and recovery from, injury by noxious factors arising from heredity, nutrition, environment, human activities, and many other determining conditions. Impediments to health which occur in the musculoskeletal system are of special and decisive importance in man and receive emphasis by the osteopathic physician. These are often referred to in modern osteopathy as "somatic components of the disease process."

Osteopathy holds that structure and function reciprocally always interrelated. This interrelati ship provides a basis for the structural assignmen cause of disease and for the technics of manipula therapy.

The treatment given by the osteopathic physic is based upon the correlation of understanding of body unity, self-regulatory mechanisms, and interrelationship of structure and function. The of surgery, drugs, and other diagnostic and th peutic modalities by osteopathic physicians surgeons is based on the balanced judgment of such factors.

Osteopathy was founded by Andrew Taylor S who in 1874 announced the principles on wh osteopathy is based. In 1892, Dr. Still opened first college of osteopathy in Kirksville, Mo.

As of November 1953, there were 11,974 os pathic physicians in the United States, 123 Canada, and 85 in other countries. In the Uni States there was one osteopathic physician 13,361 of the population.

The great majority of osteopathic physicians in private practice, but several have full-time tions with hospitals, private industry, the Uni States Public Health Service, and the Vete Administration. Nearly 10 percent of the pra tioners are women. Most osteopathic physici engage in general practice, but an increasing num specialize in one of 16 specialty fields, such surgery and obstetrics.

Licensure

The first State to pass a law to regulate the prac of osteopathy was Vermont, in 1896. All States recognize and regulate the practice of the profess The licensing examinations are given in 29 St and Hawaii by boards of osteopathic examiners other States and Puerto Rico by the medical amining boards, 15 of which include osteopa physicians. A number of States and the Distric Columbia grant licenses according to osteopa physicians all privileges of physicians and surgeons; in 5 States the use of surgery is not included, and in 5 States the prescription or administration of drugs is not permitted.

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*Executive secretary, American Osteopathic Association; secretary, Bureau of Professional Education and Colleges of the association.

Professional Organization

The American Association for the Advancement of Osteopathy was organized in 1897. In 1901 the name was changed to the American Osteopathic Association.

The American Osteopathic Association maintains an office of education which performs several functions. It maintains a master file of interviews of prospective osteopathic students made by State student-selection committees and serves as a clearinghouse for applicants to all approved osteopathic colleges. It also compiles a master list of all students enrolled in the colleges and prepares guidance literature describing the osteopathic profession and its educational provisions. The director of the office visits representative colleges where students receive their preosteopathic education, assists in the inspection of osteopathic colleges, and performs numerous other educational functions. Additional educational activities are carried on by the association's Bureau of Professional Education and Colleges, which is described later. A Bureau of Hospitals concerns itself with osteopathic hospitals and the intern and residency training programs.

The association publishes *The Journal of the American Osteopathic Association* (monthly), *The Forum of Osteopathy* (monthly), *Osteopathic Magazine* (monthly), *Yearbook and Directory of Osteopathic Physicians* (annually), *Educational Standards for Osteopathic Colleges* (annually), *Minimum Requirements and Standards for Osteopathic Hospitals Approved for Intern Training and Residency Training* (annually), and an *Educational Supplement to the Journal of the American Osteopathic Association* (annual reprint of the January issue of the journal).

Colleges of Osteopathy

At present there are six colleges of osteopathy in the United States. Each is approved by the American Osteopathic Association.

In the year 1952–53 the colleges of osteopathy enrolled 1,917 students. (See table 46.) Between 1944 and 1952 the enrollment was almost doubled.

At the close of World War II the planned student capacity in the six colleges of osteopathy was 1,500. Gifts from members of the profession, by providing for new buildings, laboratories, training hospitals, and other larger teaching facilities, have made it possible for the colleges to accommodate a student body of 1,900.

Osteopathic college enrollment during the years 1945 and 1946 was the smallest since 1900. This was due to the influence of the period of World War II, during part of which time no deferment was granted by Selective Service to preosteopathic, premedical, and predental students. From the spring of 1944 until the end of the war, the only students entering osteopathic colleges were a small number of veterans and women, and men who were deferred by Selective Service.

Table 46.—Students and graduates of osteopathic colleges in the United States, 1930–53

Year ending	Students	Graduates (calendar year)
1930	1,711	339
1940	1,590	428
1942	1,300	438
1943	1,105	356
1944	*970	351
1945	*724	*268
1946	*556	*226
1947	*821	*161
1948	1,217	*148
1949	1,523	*200
1950	1,778	374
1951	1,876	427
1952	1,928	426
1953	1,917	460
1953 (fall)	1,902	----------

*World War II influence is reflected in these data.

During the period following World War II, applications for admission to colleges of the healing arts rapidly mounted. The peak was reached during the years 1948 to 1950. There were fewer applications filed and fewer individual applicants for the 1951 freshman classes in osteopathic colleges. The number of applications and individual applicants continued to show a slight decrease in the fall of 1952. It is expected that the number of applications will continue to show a small decrease until about 1957.

The Auxiliary to the American Osteopathic Association in 1949 instituted a scholarship program. Five osteopathic scholarships of $1,000 each are awarded each year. They are applied to the tuition at the rate of $500 a year for the first 2 years in the osteopathic colleges where the scholars matriculate. The American Osteopathic Association maintains a substantial student loan fund available to juniors and seniors in osteopathic colleges.

Educational Organizations

An association representing eight osteopathic colleges was formed in June 1898, and representatives of osteopathic colleges have met at least once each year since then. Until 1901 the association, then known as the Associated Colleges of Osteopathy, by majority vote of the members adopted educational standards and in one instance suspended membership of one of the colleges for "irregular practice." The standardization and evaluation of osteopathic education is now a function of another organization. The college organization is now known as the American Association of Osteopathic Colleges.

In 1947 the American Osteopathic Association formed a Council on Education to serve as a clearinghouse for all phases of osteopathic education. It is made up of persons representing various organizations of the osteopathic profession which deal with osteopathic education. The council meets annually.

Accreditation

The American Osteopathic Association in 1901 adopted a constitution which provided for a committee on education. The constitution also provided that the committee on education, together with the Executive Committee of the Associated Colleges of Osteopathy, should constitute a joint committee with power to investigate schools applying for membership in the college association, to investigate annually schools already members, and to report annually on these schools to the Board of Trustees of the American Osteopathic Association.

In 1907, the bylaws of the American Osteopathic Association provided further machinery for the inspection and approval of osteopathic colleges. Eventually, the committee on education became known as the Bureau of Professional Education and Colleges of the American Osteopathic Association.

The Board of Trustees of the American Osteopathic Association is the approving and accrediting agency for osteopathic education; it acts on the recommendations of its Bureau of Professional Education and Colleges. This approval system is recognized generally as the accrediting agency for colleges of osteopathy.

The Bureau of Professional Education and Colleges consists of 8 members of the American Osteopathic Association elected by the Board of Trustees. The membership is composed of the executive secretary of the association, 1 member from the Bureau of Hospitals, 1 from the Advisory Board for Osteopathic Specialists, 1 from the American Association of Osteopathic Colleges, and 4 others selected from the membership at large.

Preprofessional Education

The minimum requirements for admission to an approved college of osteopathy include 2 years (60 semester hours) of credit acquired in a college or university accredited by a regional or a national accrediting agency. The applicant must also present the following minimum credits: English, 6 semester hours (12 hours recommended); physics, 1 year; biology, 1 year; inorganic chemistry, 8 semester hours; organic chemistry, 4 to 8 semester hours.

The Bureau of Professional Education and Colleges recommends, and all the osteopathic schools require, that preosteopathic students complete at least 3 years of college work. The students are urged to emphasize general education rather than to concentrate on a science major. Osteopathic colleges have as their first objective the education and training of a family physician, rather than graduating a specialist. A good cultural background in the preprofessional colleges is considered imperative in a doctor's education.

In 1953, 72 percent of the entering freshmen in osteopathic colleges had bachelor's degrees. Of the entering freshmen, 2 percent were admitted with only the minimum of 60 semester hours of collegiate work.

A number of colleges of arts and sciences throughout the United States confer the baccalaureate degree upon their students who do satisfactory work for 3 years and then successfully complete their first year in an approved osteopathic college.

The number of specified credits required by the various osteopathic colleges ranges from 34 semester hours to 46, the latter generally necessitating more than 2 years of college work. The colleges also recommend that certain subjects be included among the electives. In some States the practice acts require that a foreign language be included.

The various osteopathic college admissions committees rely not only on the quantity and quality of preosteopathic training as furnished by the official college transcript and the interview with the applicant. They also give much weight to the excellent reports now being submitted by preprofessional colleges and by physicians in the field, who, in most cases, have followed the applicant's progress during his preprofessional training.

The 496 freshmen enrolled in the osteopathic colleges in 1953-54 came from 202 liberal arts colleges and universities.

Osteopathic Curriculum and Degree

The established purpose of the colleges of osteopathy was expressed in the corporate charter granted by the State of Missouri to the American School of Osteopathy in 1892: ". . . to improve our present system of surgery, midwifery (obstetrics) and treatment of disease generally and to place the same on a more rational and scientific basis and to impart information to the medical profession and to grant and confer such honors and degrees as are usually granted and conferred by reputable medical colleges. . . ." An important aim of the osteopathic colleges is to preserve, emphasize, and extend in their teaching and research those values, principles, and precepts that distinguish the osteopathic philosophy and practice of the healing art.

A further aim of the colleges is to provide a full and complete curriculum of modern professional education, so that graduates shall be adequately trained and equipped as osteopathic physicians and surgeons, competent to cope with the problems of prevention, diagnosis, and treatment of disease generally.

Osteopathy stresses the importance of normal body mechanics to the health of an organism and emphasizes the use of manipulation to detect and correct faulty structure. All procedures of medical science, such as surgery, obstetrics, the use of drugs, physical therapy, and other diagnostic and therapeutic technics are embraced in osteopathic education. Succinctly, the main purposes of osteopathic education are the training of physicians and necessarily the training and education of students who can pass State licensing examinations. The educational process, as in other medical schools, is to some degree determined by widely varying demands in licensing laws.

The curriculum in an osteopathic college follows the plan of instruction generally recognized and accepted as standard in the education and training of physicians. The colleges being designated specifically for the training of osteopathic physicians emphasize those fundamental principles and procedures that are basic in the osteopathic school of practice.

The first 2 years are spent chiefly in the study of the basic sciences, osteopathic principles and technics, pharmacology, and the principles and methods of laboratory and physical diagnosis. A major portion of the time is spent in practical laboratory work in gross anatomy, histology, embryology, neuro-anatomy, biological chemistry, physiology, pharmacology, bacteriology, and pathology. Instruction in osteopathic principles and technics begins in the freshman year and is integrated throughout the whole curriculum.

Clinical instruction and training begin in the junior year. Instruction in therapeutics, the diagnosis of diseases in general, obstetrics, surgery, and the other specialties is presented by classroom lectures, laboratory demonstrations, and through clinical clerkships in the various clinics and hospitals, either owned by, or affiliated with, the colleges.

In the outpatient clinics, patients are assigned to the students for observation, study, and supervised history taking, physical and laboratory examination, and treatment. In the hospitals, the student clinical clerks receive training in general hospital routines and procedures. They observe and participate in delivery and operating technics and assist in and administer, under supervision, pre- and post-partum care of obstetrical patients and pre- and post-operative treatment of surgical cases. The clinical clerks receive instruction in anesthesia and observe and participate in the administration of anesthetics. They assist in or administer all forms of hospital care and treatment under the guidance and direction of the teaching members of the staff. Ward walks and presentation clinics are conducted by the various department heads and their associates. During the clinical years much emphasis is placed in the diagnostic clinics, where the upperclassmen start in as clinical clerks and then are trained in the diagnostic procedures.

All of the courses of study require the use of standardized medical and basic science textbooks, as well as the texts written by recognized osteopathic authorities.

Upon successful completion of the professional curriculum the student is awarded the degree of doctor of osteopathy, abbreviated as D. O.

Intern Training

Internships in osteopathic hospitals, approved as teaching hospitals, are of a minimum of 12 months' duration. In 1954, 98 percent of the graduates of osteopathic colleges entered intern training. In the same year, 84 osteopathic hospitals, approved for intern training and/or residency training, offered 466 internships. In December 1952, there were 433 osteopathic interns in training. The osteopathic internship is a continuation of the clinical educational program which starts during the latter part of the undergraduate course.

The American Osteopathic Association, acting upon the recommendation of its Bureau of Hospitals, is the approving agency of osteopathic hospitals to be placed on the registered hospital list or the list of approved teaching hospitals. The Bureau of Hospitals inspects and evaluates hospitals and makes recommendations annually to the Board of Trustees of the American Osteopathic Association.

Specialty Training

Educational programs leading toward specialty certification require a 12 months' internship, followed by a minimum of 3 years' specialty training, which may be 3 years of residency, preceptorship or assistantship, or a combination thereof, followed by 2 years' specialty practice.

In 1953–54, 37 osteopathic hospitals were approved for 222 residencies in the specialty fields of internal medicine, obstetrics and gynecology, roentgenology, diagnostic roentgenology, radiology, surgery, pathology, anesthesiology, ophthalmology and otorhinolaryngology, orthopedic surgery, urological surgery, psychiatry, neurology, neuro-surgery, obstetrical-gynecological surgery, and pediatrics. Each residency is a full-time training program of at least 12 months' duration. All residencies are approved annually. Such residency programs may cover a period of 3 years.

The American Osteopathic Association has established 11 specialty certifying boards. Each board is authorized to evaluate the applicant's specialty training program and to conduct written, oral, and practical examinations to determine the applicant's qualifications in a given specialty. All activities of the certifying boards are reviewed by the Advisory Board for Osteopathic Specialists. The membership of the Advisory Board is made up of representatives from each certifying board, the Board of Trustees of the American Osteopathic Association, the Bureau of Professional Education and Colleges, the Bureau of Hospitals, and the American Association of Osteopathic Colleges.

The Board of Trustees of the American Osteopathic Association is the recognized certifying agency for all specialty certifications.

Postgraduate Study

All osteopathic colleges conduct postgraduate work or advanced study under three general divisions: general review courses, intensive specialized courses, and graduate study leading to specialization and certification. Some educational institutions outside the osteopathic profession also offer s work to osteopathic physicians. The Bureau Professional Education and Colleges, through Committee on Accreditation of Postgraduate Tra ing, evaluates all graduate education except inte ships and residencies.

Research and Teaching Grants

The Bureau of Research of the American Oste pathic Association represents the Board of Truste of the association in the management of gra which the association assigns to research in t osteopathic and related sciences, or to resear fellowship training programs. It is the purpose research under osteopathic auspices to create constantly growing reservoir of basic knowled regarding the human body and its frailties fro which understanding may be derived, and to pr vide a basis for the development of the superi technics for the betterment of human health.

Osteopathic colleges are cooperating with th United States Public Health Service and the Unite States Navy, which for some years have grante funds for osteopathic research. All osteopathi colleges are cooperating with the Public Healt Service in emphasizing cancer and heart teaching for this purpose they have received teaching grants

Financing Osteopathic Education

The financial problems of higher education i America are common knowledge. They are acut in the field of the healing art. The training of a osteopathic physician has become expensive. Although tuition has been markedly increased, it cover only about one-third of the overall cost of the teaching program. Osteopathic college faculties hav been expanded. Physical plants have been improved and expanded in order to incorporate int the teaching program the vast new fund of knowledge in both basic and clinical sciences.

Administrators of the osteopathic colleges met with the Board of Trustees of the American Osteopathic Association in 1942 for a thorough analysis and discussion of educational problems. Out of this meeting came the decision to create the Osteopathic Progress Fund to sustain and expand the osteopathic colleges. Osteopathic physicians contributed, during the years 1943 through 1945, a total of $1,500,000. The osteopathic colleges immediately began a program of construction and faculty expansion.

In January 1946 a new Osteopathic Progress Fund was initiated. A goal of $7,500,000 was agreed upon and campaign activities were integrated into the regular programs of all component State osteopathic societies. Intensive campaigns in many State organizations followed, until by February 1952 the osteopathic profession had raised, almost entirely from within its own ranks, an additional $2,900,000 in cash and $2,000,000 more in pledges, which are currently being paid.

Having contributed and obligated itself for a total in excess of $6,000,000, the osteopathic profession has altered its objectives. It has established a continuing program designed to produce approximately $85,000 each month, from within its own ranks, for as long as the need exists. Efforts to date have achieved approximately 60 percent of this goal. The professional phase of the Osteopathic Progress Fund program will continue on a campaign basis until the monthly goal is achieved. It will be carried on after that on a sustaining basis to keep support from the profession at a maximum.

With such an excellent record in self-help the osteopathic profession now feels justified in looking to the American public for aid in meeting the financial needs of the colleges of osteopathic medicine. In view of the great contribution which osteopathic medicine is making to the public health, plus the fact that organized osteopathy is doing proportionately more than any other professional group to solve the financial problems of its colleges, it is believed that the public will respond. A modest beginning has been made in bringing the needs of osteopathic education before the public, and, since this program has been started, thousands of contributions have been received. These have been, almost entirely, small gifts from the patients of osteopathic physicians. Moderate-sized grants have been received from foundations and industrial organizations.

Osteopathic Colleges

The number following the name of the institution indicates the enrollment in the fall of 1953.

CALIFORNIA

College of Osteopathic Physicians and Surgeons, Los Angeles, 344

ILLINOIS

Chicago College of Osteopathy, Chicago, 220

IOWA

Des Moines Still College of Osteopathy and Surgery, Des Moines, 249

MISSOURI

Kansas City College of Osteopathy and Surgery, Kansas City, 366

Kirksville College of Osteopathy and Surgery, Kirksville, 344

PENNSYLVANIA

Philadelphia College of Osteopathy, Philadelphia, 379

Total enrollment, 1,902

Selected References

The Osteopathic Profession and its Colleges. Chicago, American Osteopathic Association, 1953. 30 p.

Educational Standards for Osteopathic Colleges. Chicago, American Osteopathic Association, Bureau of Professional Education and Colleges, 1953. 8 p.

Educational Supplement (reprint) from the Journal of the American Osteopathic Association, January 1954. 18 p.

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22. Pharmaceutical Education

By GLENN SONNEDECKER* and GEORGE URDANG**

PHARMACY has recently been told that it should strive toward higher professional goals and that in doing this the present 4-year collegiate programs should be improved and strengthened.[1] The suggestion was also made that "to achieve a professional standing commensurate with that of other health professions, steps must be taken to develop and establish a program of education and training on a level comparable to preparation for those professions." What has pharmacy done to develop a program of education that will give it professional standing, prepare its practitioners to render competent pharmaceutical service as well as discharge their civic responsibilities, and enable it to attain higher professional goals?

Definition and Beginnings

Pharmacy applies a number of sciences to the segment of medical care that is concerned primarily with preparing and dispensing drugs. This socially necessary and specialized function held an important place in all ancient cultures. But only with the elaboration of pharmaceutical knowledge, processes, and products, in the centers of medieval Arabic culture, did the pharmacist emerge as a recognized and specialized practitioner distinct from the practitioner of medicine.

Emergence of the pharmacist in the Western World gained legal recognition for the first time in the 13th century. Since then the implications of incompetence or carelessness in pharmaceutical pursuits have brought social controls over the practice of pharmacy in all civilized countries, including compulsory professional education.

In the Anglo-Saxon world academic study and professionalization in pharmacy evolved more slowly and erratically than on the continent, where separation, regulation, and protection of fields impinging on health readily gained acceptance. "Pioneering America" reverted to a more primitive stage in which the "physician-pharmacist" dominated the medical scene, ordinarily a self-made man of little or no academic education in either profession. With cultural and urban development the pharmaceutical and medical functions split into two professions. By the early 19th century an ambitious group called "druggists" had arisen, primarily in eastern centers of the United States, who did some drug manufacturing and dispensed and distributed drugs wholesale to physicians, apothecaries, and country storekeepers.

Some of these druggists and apothecaries organized the first American school of pharmacy at Philadelphia in 1821.

Licensure

A major factor in the rather hesitant evolution of American pharmacy was the slow development of State licensure of pharmacists. Few States attempted any regulation of pharmacy before the Civil War. Most of the States passed such laws during the last quarter of the 19th century, asking for some demonstration of minimum competence—however acquired—to qualify for a license to practice. No State, however, demanded formal education of its pharmacy recruits until 1905, in which year legislation became effective in New York, requiring that all applicants for registration as pharmacists should be graduates in pharmacy. With few exceptions an applicant for a license anywhere in the United States today must have been graduated from a college of pharmacy, must have obtained a year or more of supervised experience in the profession, and then passed the State licensing examination.

Licensure to practice pharmacy is in the hands of

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[1] Edward C. Elliott, director, *The General Report of the Pharmaceutical Survey, 1946-49.* Washington, D. C., American Council on Education, 1950. p. 229.

State board of pharmacy (known by various names) each State. The members of the boards are gistered pharmacists and are usually appointed the Governor. In addition to licensing applicants practice pharmacy the board has responsibility r supervising the practice of pharmacy within the tate. Licensure through reciprocity is granted by 5 States and the District of Columbia provided rtain qualifications are possessed by the applicant. here is no national board of pharmacy that examines applicants for licensure.

upply and Demand

In 1951 there were at least 101,568 pharmacists censed in the United States and in some branch of ractice. Most pharmacists are in retail pharmacies bout 87.2 percent), and a growing number (now at ast 3.3 percent) practice in hospital pharmacies. harmaceutical manufacturers and wholesale druggists employ about 7,000. Smaller numbers are mployed in Government work, teaching, and other apacities. Graduate degrees are usually required, r preferred, in teaching, in many industrial positions (particularly research), and in some hospital harmacies.

No oversupply of pharmacists has existed for some ears, nor is any in prospect. Some difference of pinion arises as to whether there are more retail harmacies than public welfare requires, thus hampering further professionalization and specialization f pharmacy's practitioners. Given the existing umber of establishments, however, the dominant eeling within the profession seems to be that schools re graduating about the right number of students, n the average, but not enough in some geographic reas to staff the profession properly.

rofessional Societies and Journals

Fifteen national pharmaceutical organizations erve specialized interests. A number of these are ffshoots of the first and principal national professional association, the American Pharmaceutical ssociation (f. 1852). With this association the ther organizations—specialized-professional, educational, manufacturing, wholesale, commercial, or ultural—all maintain either an affiliated status or ave representation in its house of delegates. An nnual National Drug Trade Conference also provides an open forum for representatives of all segments of the profession and industry.

Since 1898 the business interests of pharmacy wners have been cared for in the National Association of Retail Druggists. The American Society of Hospital Pharmacists (f. 1942) and the American College of Apothecaries (f. 1940) are vigorous specialized affiliates of the American Pharmaceutical Association.

After 1870 State pharmaceutical associations were founded across the country; they now function on behalf of practicing pharmacists in all States. Association secretaries hold an annual conference.

The National Association of Boards of Pharmacy, organized in 1904, has as its objective "to provide interstate reciprocity in pharmaceutic licensure, based upon uniform minimum standards of education and licensure." Active membership is held by all 45 State and the District of Columbia boards of pharmacy that grant licenses reciprocally.

The associations and private publishers issue a wide variety of pharmaceutical journals. There are 20 national and 48 sectional, State, and local periodicals. The *Journal of the American Pharmaceutical Association* (f. 1912) has been published in two editions since 1940. The oldest of the periodicals, the *American Journal of Pharmacy*, has been issued continuously since 1825. Although it has no journal, the American Institute of the History of Pharmacy has issued publications of special interest periodically since 1941.

Evolution of Education

Up to the 17th century pharmaceutical instruction remained almost entirely within the apprenticeship system of the European guilds; formal instruction flowered during the next century; and in the 1800's it developed rapidly in institutions of higher learning.

In the United States a burgeoning educational consciousness in the 1820's was reflected in pharmacy by the establishment of the first two schools—both organized by local associations of pharmacists called the Philadelphia College of Pharmacy (1821) and the New York College of Pharmacy (1829). Prior to that time there had been little separation of medicine and pharmacy, with instruction centering in an apprenticeship system imported from England.

The optional pharmacy courses, operated mainly by early local associations, graduated only about 500 students before the Civil War. After the war came an upsurge in the founding of schools, and American pharmaceutical education began to make connection with institutions of higher learning. Revolutionary consequences eventually emerged from the pharmacy course established at the University of Michigan in

1868. This course was infused with laboratory work, and it ignored the traditional apprenticeship requirement.

At least 83 schools opened their doors to pharmacy students during the 19th century, of which about sixty were still operating at the end of the century. These schools presented a wide array of standards, degrees, and length of curriculums. A student might study from 1 to 4 years to graduate.

Sweeping changes occurred during the first half of the present century. Preliminary education, commonly grammar school in 1900, although widely varying, became standardized at 4 years of high school. The pharmacy curriculum was gradually extended from study ordinarily not longer than 40 weeks or so to a regular 4-year college course. A century-old controversy about the welter of degrees was resolved in favor of the bachelor of science.

Changes in the educational system since the turn of the century have been mainly in the direction of quality rather than quantity. New schools were established usually where none existed, and now at least one school is to be found in all but 5 States. About nine-tenths of the 74 accredited schools function as integral parts of or as affiliates of general institutions of higher learning. The independent schools that once dominated the pharmaceutical scene have been gradually disappearing since the late 19th century, mainly by affiliation.

While independent association schools were mainly responsible for establishing an educational system and stimulating ambitions in American pharmacy, the pace-setters for modern pharmaceutical education were largely State Universities which entered the field mainly after 1880, although there were earlier beginnings.

Educational Associations

A major factor in achieving higher standards and greater uniformity among the schools has been the American Association of Colleges of Pharmacy (founded in 1900 as the American Conference of Pharmaceutical Faculties). This association provides organized leadership in promoting pharmaceutical education and research. It has fostered cooperative relations among the schools and between schools and State boards at the national and the district levels. The association's annual meeting provides teachers' conferences; it also furnishes opportunity for exchange of information and for making policy decisions by administrators. It is held in conjunction with the American Pharmaceutical Association.

A remarkable journal and the first of its kind in the world, the *American Journal of Pharmaceutical Education*, was created in 1937 by the American Association of Colleges of Pharmacy. It is published four times a year.

A precursor of the American Conference of Pharmaceutical Faculties (the present association) was the Conference of the Schools of Pharmacy, which had a lively but rather ineffectual existence from 1870 to 1884. Shortly after the demise of the conference, a Section on Education and Legislation was established (1887) in the American Pharmaceutical Association. The section bridged the gap between the two associative attempts of the schools, and at present still offers an open forum where educators and practitioners meet.

An influential organization in this field is the American Foundation for Pharmaceutical Education (f. 1942), a nonprofit corporation established to uphold and improve pharmaceutical education. Its membership consists of 10 national pharmaceutical associations, and its resources are derived from contributions made chiefly by the pharmaceutical manufacturing, wholesaling, and retailing establishments. It has made extensive grants for scholarships and graduate fellowships and has supported pharmaceutical education in other ways.

Surveys and Studies

Pharmaceutical education has been the subject o several surveys and studies in recent years. On of these, reported in 1927 under the title, *Ba Material for a Pharmaceutical Curriculum*, was ma by W. W. Charters, A. B. Lemon, and Leon Monell. Through an analysis of the responsibilities of th neighborhood pharmacist the investigators develope a functional pharmaceutical curriculum. Althoug this report was widely noted, the extent of its direc influence remains an open question.

A number of changes and discussions of change i American pharmacy and pharmaceutical educatio stem from the Pharmaceutical Survey. This broad scale searching study, originated through intrapro fessional efforts, was conducted under the auspices the American Council on Education, and had exte sive financial support from the American Foundatio for Pharmaceutical Education. The 4-year fac finding and interpretation (1946 49) aimed at deve

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[1] Published by McGraw-Hill Book Co., Inc.

oping "proposals for the betterment of pharmacy as a profession and as a public service." The main fruits of this investigation appear in a general report[3] and a series of monographs, which have been used freely in the preparation of this article.

Much of this survey centered on pharmaceutical education, and out of it grew a special study published in 1952 under the title, *The Pharmaceutical Curriculum.*[4] This 257-page report was prepared by Lloyd E. Blauch and George L. Webster for the Committee on Curriculum of the American Association of Colleges of Pharmacy. The report describes the recent progress of pharmaceutical education, outlines the objectives and main features of this form of professional education, and makes suggestions for its improvement. The administrator or teacher finds there a guidepost to the American pharmaceutical education of tomorrow, even though he may not agree with all the statements it contains.

Accreditation

The membership criteria of the American Association of Colleges of Pharmacy served until 1938 as an informal accreditation—influential but also often ineffective. In 1932, the association joined with the American Pharmaceutical Association and the National Association of Boards of Pharmacy in sponsoring a formal accrediting agency, the American Council on Pharmaceutical Education. The membership consists of three representatives from each of these associations and one from the American Council on Education. After a gestation period of 5 years, standards were approved, and inspection committees began the task of examining applicants.

The work of the council has significantly upgraded and systematized the institutions accredited and greatly facilitated the reciprocal recognition of licenses of pharmacists among the several States. Standards represented by accreditation are mainly qualitative rather than quantitative. Accreditation involves no expense to the institutions concerned except for the initial examination of a previously unaccredited institution. The council is supported by the sponsoring agencies with substantial assistance from the American Foundation for Pharmaceutical Education.

In 1952 the council issued its first classified list of accredited schools: 60, class A (no important deficiencies); 8, class B (deficiencies that can be corrected promptly by administrative action); 4, class C (deficiencies requiring considerable time and effort to correct); 2, class Y (temporary accreditation of new schools). Whether a graduate's school is class A or class C has no effect on his privileges of licensure, except in New Hampshire. Moreover, the new classification does not presume to offer a selective guide to prospective students (having arisen from other needs), although accreditation itself offers a safe basis for the student's selection of a school.

Accredited schools have common objectives although there is considerable variation in the actual content and level of teaching. Financial handicaps are not uncommon; differences in faculty salary costs per student are striking.

Schools and Enrollments

State-supported schools now constitute the largest single group of colleges of pharmacy, and this number is still increasing. The accredited schools in 1952 were controlled as follows: State and Territorial, 43; private, 27; municipal, 3; and district, 1. Of the privately controlled schools, 9 were denominational; 5 were entirely independent of a general institution of higher learning.

Undergraduate enrollment in the colleges of pharmacy increased from about 4,000 in 1900 to more than 20,000 in 1950. (See table 47.) The peak was reached in 1950, and it has since dropped off about a fifth. (See table 48.) Women now constitute almost 10 percent of the student body, twice as many in relation to men as there were a half century ago.

There were few graduate students in schools of pharmacy until the 1930's when the 4-year undergraduate course became the standard. The beginnings antedate 1900, however, when the University of Wisconsin offered in 1892–93 pharmaceutical graduate work promptly upon adopting the first pharmacy curriculum (optional) leading to the bachelor of science.

From 1932–33 to 1951–52 there were granted annually between 10 and 48 doctor of philosophy and between 13 and 66 master of science degrees. During these 20 years graduate work yielded 400 doctor of philosophy and 950 master of science degrees. Some idea of the recent development may be gained from the fact that 596 graduate students (including 57 women) were enrolled in 1952–53 at 39 of the pharmacy schools within the continental United States.

Various factors contributed to this upsurge of

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[3] Edward C. Elliott, director, *The General Report of the Pharmaceutical Survey, 1946–49.* Washington, D. C., American Council on Education, 1950.

[4] Published by the American Council on Education, 1952.

Table 47.—Undergraduate students and graduates (first degrees) in schools of pharmacy, 1900–50

Year	Number colleges reporting	Students	Graduates
1900	53	4,042	1,130
1910	79	6,226	1,715
1920	53	5,026	1,023
1930	65	10,906	1,798
1940	65	8,592	1,473
1950	72	20,573	5,751

Source: From Lloyd E. Blauch and George L. Webster, *The Pharmaceutical Curriculum*, p. 11, as compiled from data of the Office of Education, Federal Security Agency.

Table 48.—Undergraduate students, by classes, and graduates (first degrees) in schools of pharmacy, 1949–50 to 1952–53

Item	1949–50	1950–51	1951–52	1952–53
Freshmen	4,327	4,267	3,823	3,775
Sophomores	5,503	5,356	4,863	4,275
Juniors	5,209	4,803	4,437	4,202
Seniors	5,880	5,188	4,491	4,316
Total	20,919	19,614	[1] 17,669	[2] 16,639
Graduates (first degrees)	5,751	5,033	4,247	--------

[1] Includes 55 special students.

[2] Includes 71 special students.

Source: From a manuscript report of the chairman of the Executive Committee, A. A. C. P., on enrollment in schools and colleges of pharmacy, first semester, term, or quarter, 1952–53, and from data in the U. S. Office of Education.

advanced study. A major financial stimulus, aside from GI benefits, came from the American Foundation for Pharmaceutical Education, which provides graduate fellowships—88 for 1954–55. Improvement in undergraduate pharmaceutical education, increasing demand for persons with advanced training, and the desire of faculties to offer graduate work because of the stimulation it affords to them are other factors in the development of advanced training.

Professional Curriculums and Degrees

The typical curriculum of the schools of pharmacy is 4 years in length, and the admission requirement is graduation from an approved high school. Admission tests specifically designed for pharmacy are neither well developed nor extensively used.

Ten schools of pharmacy operate on an arrangement whereby the student takes 1 year of work in a college of arts and sciences before he is admitted to the school of pharmacy where he then spends 3 years. The degree granted for the completion of the 4-year curriculum, either 0–4 or 1–3, is bachelor of science in pharmacy.

The standard 4-year curriculum lays a foundation in chemical, physical, and biological sciences, and then applies these sciences in specifically pharmaceutical subjects. Recent efforts at a number of schools have been directed toward including more pharmacology and toward the introduction or extension of studies in "pharmacy administration" (such as economics, marketing, and accounting). A limited number of electives in general education are possible. In many schools, however, a part of the elective credits may be used for specialized professional courses.

The *Pharmaceutical Syllabus*, issued in five editions between 1906 and 1946, was a major factor in achieving a reasonable standardization of curriculum content. In 1946 the jointly sponsored syllabus committee was replaced by a standing Committee on Curriculum of the American Association of Colleges of Pharmacy.

The present trend toward lengthening collegiate study for pharmacy, first finding concrete expression at Ohio State University (1948), is now represented by 14 schools. Half of these continue to offer the 4-year course optionally. The additional course offerings place varying emphasis upon general education, a firmer foundation in basic sciences, and more opportunity for professional specialization. New patterns also vary widely with regard to preprofessional study: 0–5, 1–4, 2–3, and 2–4. Schools with both old and new programs are currently engaged in reviewing curriculums to improve content, sequence, and integration of courses.

Schools offering 5-year programs generally retain the standard bachelor of science degree, but one offers a bachelor of pharmacy degree for such a program. Several such institutions, however, make it possible for the student to fulfill requirements for a second baccalaureate degree (e. g., arts, business administration, or journalism) while earning the bachelor of science in pharmacy. Two California universities offer a 2–4 program leading to the professional degree of master of pharmacy in one school and doctor of pharmacy in the other.

A longer program of pharmaceutical education w assured by the action of the American Association of Colleges of Pharmacy in 1954 when it amended its by-laws stating that on and after April 1, 1965, each member college should require of each candidate for a degree in pharmacy, completion of not less than 5 full academic years of training, including both prepharmacy instruction and a minimum of 3 years of professional instruction. The association also required that only the degree of bachelor of science or the degree bachelor of science in pharmacy should be given for the completion of the prescribed course.

Graduate Study

Both pharmaceutical faculties and pharmaceutical industry have a pressing need for highly trained and specialized personnel with pharmaceutical backgrounds. Hence the rapidly increasing number of students who obtain graduate degrees are easily placed. A number of these positions can be and often have been filled by scientific specialists trained in graduate areas outside of pharmacy (e. g., chemistry). Yet, the special orientation and problems involved in pharmaceutical research, production, and teaching have brought active support to expansion of graduate study within pharmaceutical education.

For admission to graduate work in a pharmaceutical field most schools require a bachelor's degree with specialization in pharmacy, but frequent exceptions are made for able students who have degrees in related fields.

Of 30 schools of pharmacy conducting graduate work in 1949, 11 offered only the master's degree; 19 offered both the master's and doctor's degree. Meanwhile, an additional 9 schools have embarked upon graduate programs. The main fields are pharmacy, pharmaceutical chemistry, pharmacology and pharmacognosy; and a new field is now opening in pharmacy administration. Several schools offer a master's degree in hospital pharmacy, often integrated with an internship program. One, Wisconsin, offers the master of science and doctor of philosophy in the history of pharmacy, and (optionally) as a joint major with the university's history of science department. Requirements in the various pharmaceutical fields are usually analogous to those in other areas of university graduate study, since the graduate school generally controls and supervises the program.

Postcollege Short Courses

Postcollege instruction for practicing pharmacists receives an increasing amount of attention, although a few years ago only a small number of schools were making serious efforts in this direction.

Programs lasting from one to several days and given annually or oftener at a school are most common, but they reach only a small number of pharmacists. A few schools are developing year-round extension programs, or staging short courses periodically in various parts of the State, which reach larger segments of the profession. Some experience has been gained with traveling instructors or advisers. Further experimentation with and expansion of various types of continuation study are being encouraged.

Principal Problems in Education

The competence and carefulness with which the Pharmaceutical Survey was conducted and its findings were presented went far toward confirming and focusing attention upon the fundamental problems related to pharmaceutical education. Responsible persons and groups, in education and out, are making valiant attempts to avoid the lack of implementation that not infrequently has been a fatal weakness of "surveys" in whatever field.

Immediate agreement on the answers, perhaps even on just what the problems are, can hardly be expected. Yet, the survey inoculated education and American pharmacy at large, with a ferment that already has had some salutary results. Some of the problems still not resolved are mentioned below.

Curriculum.—A pivotal issue that will remain in the forefront of pharmaceutico-educational affairs in the immediate years ahead is the length and content of the undergraduate curriculum. The report of the survey reflects a rather general ambivalent attitude on this issue. On the one hand it endorsed the continuance of the standard 4-year course as a minimum requirement; on the other hand it urged strong schools to develop higher forms of professional preparation based on two or more years of collegiate general education and basic science. Those who ask retention of the present 4-year standard maintain that it is or can be made adequate for the practice of pharmacy in the forseeable future and that it assures a safe level of competence in the public interest. Proponents of a longer curriculum aim at something higher than the average needs of existing practice, ask for more general education to prepare the pharmacist for a high level of professional and civic responsibility, and point out that only pharmacy among the health professions retains a 4-year standard course. Various other facts are related t-these two points of view. In the 4 years since the Pharmaceutical Survey was completed 14 schools have begun to offer curriculums—optional or required—of more than 4 years. The action taken by the American Association of Colleges of Pharmacy in 1954, as has been noted, promises an orderly and fairly uniform conversion to a minimum 5-year curriculum pattern, although one may expect a fluid situation in pharmaceutical education for some years, marked by curriculum experiments.

Teaching staffs.—Unlike the curriculum question, the need for further upgrading of present faculties and for increasing the supply of fully qualified new teachers has not been open to serious question. The survey considered this an "insistent need." Financial opportunities in both industry and professional practice, as compared with teaching, intensify the problem. The adequacy of present staffs varies widely among schools. Although no quick solution of staff problems may be expected, important beginnings have been made through summer teachers' seminars and the older teachers' conferences for present staffs, and through extensive fellowship programs in recent years to provide infusions of new doctor of philosophy blood.

Admissions.—Although recruitment appears not to be a pressing problem, at least some of the school administrators feel the need for efforts to interest a higher caliber of student. This implies a program to create in high schools and junior colleges a greater awareness that the present opportunities in pharmacy are varied and promising. Some think that until this occurs the improvement of screening techniques for pharmacy cannot be fully utilized. Continued improvement in the professional aptitude and attitudes of the average student would not only mitigate the rather high student mortality but would also have significant implications for the professional character as well as competence of tomorrow's pharmacists.

Finances.—Viewing American pharmaceutical education as a whole, the survey concluded that the schools do not have the financial resources to maintain the educational level sought by the profession. Substantial evidence appeared that public authorities and educational administrators were not aware of the extent of the legitimate financial needs of a modern school of pharmacy.

In recent years there has been a noteworthy advance toward adequate housing by a number of schools; 10 have new buildings constructed or authorized; another 7 schools now occupy new wings or parts of new buildings; 9 others have had old buildings renovated.

A lack of complacency about these and other problems signalizes the promise of contemporary pharmaceutical education. While segments of the educational system show weaknesses, compared with some other professions, education in pharmacy appears to have come a longer way in a relatively short time than many laymen have supposed.

Colleges and Schools of Pharmacy

The figures indicate the enrollments in 1953-54; the first figure gives the undergraduate and special enrollment, the second figure, where given, indicates the graduate enrollment. The data are from a table supplied by Louis C. Zopf, chairman of the Education Committee, American Association of Colleges of Pharmacy. All institutions except those marked with an asterisk (*) are members of the association.

ALABAMA
- Alabama Polytechnic Institute School of Pharmacy, 225
- Howard College Division of Pharmacy, 124

ARIZONA
- University of Arizona College of Pharmacy, 84, 3

ARKANSAS
- University of Arkansas College of Pharmacy, 57

CALIFORNIA
- University of California College of Pharmacy, 238, 10
- University of Southern California School of Pharmacy, 287, 14

COLORADO
- University of Colorado College of Pharmacy, 299, 12

CONNECTICUT
- University of Connecticut College of Pharmacy, 307, 18

DISTRICT OF COLUMBIA
- George Washington University School of Pharmacy, 138
- Howard University College of Pharmacy, 155

FLORIDA
- Florida Agricultural and Mechanical University School of Pharmacy, * 24
- University of Florida College of Pharmacy, 252, 24

GEORGIA
- Southern College of Pharmacy, 160
- University of Georgia School of Pharmacy, 186, 2

IDAHO
- Idaho State College, College of Pharmacy, 174

ILLINOIS
- University of Illinois College of Pharmacy, 396, 17

INDIANA
- Butler University College of Pharmacy, 138, 14
- Purdue University School of Pharmacy, 322, 58

IOWA

Drake University College of Pharmacy, 184
State University of Iowa College of Pharmacy, 175, 14

KANSAS

University of Kansas School of Pharmacy, 97, 13

KENTUCKY

University of Kentucky College of Pharmacy, 128

LOUISIANA

Loyola University College of Pharmacy, 144
Xavier University College of Pharmacy, 93

MARYLAND

University of Maryland School of Pharmacy, 237, 37

MASSACHUSETTS

Massachusetts College of Pharmacy, 501, 24
New England College of Pharmacy, 212

MICHIGAN

Detroit Institute of Technology College of Pharmacy, 180
Ferris Institute College of Pharmacy and Allied Sciences, 342
University of Michigan College of Pharmacy, 165, 27
Wayne University College of Pharmacy, 167, 3

MINNESOTA

University of Minnesota College of Pharmacy, 243, 9

MISSISSIPPI

University of Mississippi School of Pharmacy, 148, 3

MISSOURI

St. Louis College of Pharmacy and Allied Sciences, 242, 7
University of Kansas City School of Pharmacy, 91, 6

MONTANA

Montana State University School of Pharmacy, 75, 2

NEBRASKA

Creighton University College of Pharmacy, 144
University of Nebraska College of Pharmacy, 108, 3

NEW JERSEY

Rutgers University College of Pharmacy, 366, 7

NEW MEXICO

University of New Mexico College of Pharmacy, 85

NEW YORK

Columbia University College of Pharmacy of the City of New York, 404, 25
Fordham University College of Pharmacy, 460
Long Island University, Brooklyn College of Pharmacy, 573
St. John's University College of Pharmacy, 395
Union University, Albany College of Pharmacy, 298
University of Buffalo School of Pharmacy, 326, 4

NORTH CAROLINA

University of North Carolina School of Pharmacy, 210, 15

NORTH DAKOTA

North Dakota Agricultural College School of Pharmacy, 174, 2

OHIO

Ohio Northern University College of Pharmacy, 207
Ohio State University College of Pharmacy, 138, 23
University of Cincinnati, Cincinnati College of Pharmacy, 273
University of Toledo College of Pharmacy, 107

OKLAHOMA

Southwestern State College School of Pharmacy, 71
University of Oklahoma School of Pharmacy, 135, 1

OREGON

Oregon State College School of Pharmacy, 142, 1

PENNSYLVANIA

Duquesne University School of Pharmacy, 210, 5
Philadelphia College of Pharmacy and Science, 611, 33
Temple University School of Pharmacy, 421, 14
University of Pittsburgh School of Pharmacy, 282, 13

PUERTO RICO

University of Puerto Rico College of Pharmacy, 158

RHODE ISLAND

Rhode Island College of Pharmacy and Allied Sciences, 169

SOUTH CAROLINA

Medical College of South Carolina School of Pharmacy, 56
University of South Carolina School of Pharmacy, 164

SOUTH DAKOTA

South Dakota State College of Agriculture and Mechanic Arts, Division of Pharmacy, 155

TENNESSEE

University of Tennessee School of Pharmacy, 169, 4

TEXAS

Texas Southern University School of Pharmacy, 93
University of Houston College of Pharmacy, 161, 2
University of Texas College of Pharmacy, 390, 11

UTAH

University of Utah College of Pharmacy, 148, 9

VIRGINIA

Medical College of Virginia School of Pharmacy, 218, 7

WASHINGTON

State College of Washington School of Pharmacy, 193, 4
University of Washington College of Pharmacy, 227, 20

WEST VIRGINIA

West Virginia University College of Pharmacy, 111

WISCONSIN

University of Wisconsin School of Pharmacy, 244, 50

WYOMING

University of Wyoming College of Pharmacy, 64

Total enrollment:

Undergraduate, 15,850
Graduate, 570

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23. Physical Therapy Education

By MARY E. HASKELL and DOROTHY HEWITT*

PHYSICAL THERAPY is one of the paramedical professions which have come into prominence as the scope of medical care has expanded. It is one of several services which the physician directs in the physical rehabilitation of patients. Physical therapy is defined as the treatment of disease and injury by physical means such as heat, light, water, electricity, massage, and therapeutic exercise including procedures such as gait training and other functional activities, and manual and electrical muscle testing. In a broad sense physical therapy also includes "therapeutic teaching."

Physical therapy as a healing art goes back to Hippocrates. As a profession it is relatively new since it was established after World War I. Its development has been progressive, and its scope is far greater today than before World War II.

The Profession

Physical therapy is prescribed for a wide variety of illnesses and physical disabilities. Predominantly, patients requiring this service include those with fractures, arthritis, cardiovascular accidents, cerebral palsy, and poliomyelitis; workmen injured in industrial accidents; paraplegics and amputees; the mentally ill; the war wounded; and persons who have poor body mechanics.

On the basis of recent surveys conducted by the Health Information Foundation, the American Hospital Association, the National Foundation for Infantile Paralysis, and the American Physical Therapy Association, the picture of present qualified personnel employed, job vacancies, and additional need for personnel during the next 5 years is as follows:

Total qualified employed personnel, 1952	5,000
Job vacancies, 1952	2,522
Estimated need, 5 years	10,728

Physical therapists are currently seeking to fulfil the last of the accepted criteria for a full-fledged profession—legal recognition. Prior to 1949 only four States—Connecticut, Maryland, New York, and Pennsylvania—and the Territory of Hawaii provided registration or licensing for physical therapists. By August 1, 1953, the following States had been added: Arizona, Arkansas, California, Florida, Georgia, Illinois, Massachusetts, Minnesota, New Hampshire, New Mexico, North Carolina, Oklahoma, South Carolina, Washington, and Wisconsin.

There is one professional organization, the American Physical Therapy Association, which was founded in 1921 and maintains headquarters at 1790 Broadway, New York. It publishes a monthly journal, the *Physical Therapy Review*. The American Registry of Physical Therapists is a national voluntary registry administered by the American Congress of Physical Medicine and Rehabilitation.

Evolution of Education

At the outbreak of World War I a few physical therapists had been trained by physicians and were employed in their offices or large hospitals, but there were no schools of physical therapy or even short courses in this country. Soon after the war started, several short courses (6 weeks to 3 months) were established which admitted chiefly teachers of physical education. The first physical therapy course was organized at Walter Reed Hospital by direction of the Surgeon General's Office. Because this course could not supply all the needs, a request was sent to a number of colleges and schools of physical education to assist in training physical therapists (reconstruction aides). Fourteen institutions established courses to meet the requirements outlined. The largest of these was Reed College in Portland, Oregon.

Educational trends in physical therapy have paralleled those in other professions. There has been a consistent effort to develop professional education beyond the limits of a technical training. Degree courses increased from 7 in 1945 to 23 in 1953, indicating the emphasis which is now placed on this type of program. The total number of schools in 1945 was 32, including 8 emergency Army schools, while in 1953 the total was 33, including 1 Army school.

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*Miss Haskell is associate executive director and Miss Hewitt educational consultant of the American Physical Therapy Association.

Accreditation

From 1928 until 1936 the American Physical Therapy Association assumed the responsibility for approving schools of physical therapy. After 1936, at the request of the American Physical Therapy Association, this function was added to the work of the Council on Medical Education and Hospitals of the American Medical Association. Accreditation following inspection is based on the Essentials of an Acceptable School of Physical Therapy affirmed by the council and others directly concerned with the standards of physical therapy education.

Schools and Enrollments

Curriculums in physical therapy are established either in colleges and universities accredited by the regional associations of colleges and secondary schools and associated with medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association, or in teaching hospitals approved by the Council on Medical Education and Hospitals. Of the 33 approved institutions, 5 confer degrees only, 10 confer certificates only, and 18 confer both degrees and certificates. The courses cover a period of 4 years.

The graduating classes enrolled in the 33 schools in 1952–53 totaled 619. (See table 49.)

Table 49.—Schools of physical therapy and graduates, in stated years

Year	Number of schools	Number of graduates
1928	10	90
1941	15	238
1945	[1] 32	632
1947	23	383
1953	33	619

[1] Includes 8 Army.

Admission Requirements and Curriculums

Prior to World War II, when most courses offered only a certificate and the degree program had not become generally established, the admission requirement was graduation either from a school of physic education or from a school of nursing. Today wi the establishment of 4-year university progra students may enter directly from high school or ma transfer into the program, preferably by the end the second college year.

On the basis of a research project recently co pleted by the Testing and Advisement Center of Ne York University for the American Physical Thera Association, there is reason to believe that today most successful physical therapist is a graduate of 4-year integrated university course. This pattern education provides a general background in th humanities and social, biological, and physic sciences. Generally this curriculum is divided that the major emphasis of the first 2 years is liberal arts and the last 2 years in the applied scienc and technical courses. Practical clinical experienc is an integral part of the curriculum.

Advanced Degrees

Eleven universities offer graduate degree progra for physical therapists. All of these are maste degrees: M. A., 1; M. S., 4; M. A. in physi therapy, 2; M. S. in physical therapy, 2; M. A. i anatomy or physiology, 1; M. S. in anatomy a physiology, 1; and M. S. in physical therapy a education, 1. Courses include organization a administration, specialized treatment procedur research, and advanced study in basic biologi sciences. Several universities recognize physi therapy as a minor subject for doctor of philosop candidates in anatomy, physiology, and educatio

Short-Term Courses Not Leading to Degrees

Short-term postgraduate courses not leading advanced degrees are also offered by various unive sities and hospitals throughout the country. The are devoted to advanced study and current trea in specialized areas such as poliomyelitis, cereb palsy, psychosomatics, and rehabilitation and neu muscular reeducation techniques. These cour extend from 8 days to 6 months.

Current Educational Problems

The wide use of physical therapy during World W II and the modern concept of rehabilitation of ac and chronically disabled persons have created demand for physical therapy service. The dema is acute today and will probably continue to be for years to come. This places a burden on t educational institutions. It is generally accep that existing approved schools will have to exp their facilities and additional schools will have to be established. A survey of this problem has just been completed by the American Physical Therapy Association and the National Foundation for Infantile Paralysis. The obstacles to expansion of schools are lack of faculty, space, equipment, and funds.

Additional instructors and clinical supervisors must be trained to teach the technical and practical courses of the curriculum. There is also a need for basic science instructors, particularly in the subjects of anatomy and physiology. This need appears to be common to many professions. Salaries for teaching are not attractive compared with those for practicing professionally. It is only by making a financial sacrifice that persons of the desired caliber enter the teaching field.

Space for laboratory courses is at a premium. Although many universities have building programs, every department clamors for additional space. Limited space puts a ceiling on the number of students that can be accommodated.

There is a need for more audiovisual and other teaching aids. At present, instructors are overburdened with class schedules and do not have the time for developing new teaching devices. The major problem, however, is lack of funds in the budget for such aids as films.

Financial assistance is needed for: (1) Assistance to students through scholarships and professional guidance; (2) assistance to schools to provide adequate facilities, salaries for instructors and operational expenses; and (3) fellowships for the preparation of teachers.

Steps have already been taken to cope with some of these problems. Governmental and voluntary agencies concerned with care of patients and the American Physical Therapy Association are studying the situation and pooling their resources to provide greater numbers of well-qualified personnel. The philosophy and minimum standards of education are widely accepted and supported by educators, physicians, and others responsible for the care of patients. The major educational problem therefore is principally one of maintaining sound standards through a period of rapid growth in the profession.

Schools of Physical Therapy and Enrollments

The names of the institutions which offer approved programs in physical therapy are shown below. The figures indicate the enrollments in physical therapy for the academic year 1953–54. The enrollment data, which were supplied by the Office of Education, were compiled from various sources, and they may not, therefore, be comparable in all respects.

CALIFORNIA
- Childrens Hospital, University of California, Los Angeles, 59
- College of Medical Evangelists, 78
- Stanford University, 45
- University of California, School of Medicine, 64
- University of Southern California, 61

COLORADO
- University of Colorado, Medical Center, 27

CONNECTICUT
- University of Connecticut, 102

ILLINOIS
- Northwestern University Medical School, 32

IOWA
- State University of Iowa, College of Medicine, 24

KANSAS
- University of Kansas Medical Center, 39

LOUISIANA
- Charity Hospital of Louisiana, 9

MASSACHUSETTS
- Boston University, Sargent College of Physical Education, 81
- Bouve-Boston School (Tufts College), 54
- Simmons College, 51

MICHIGAN
- University of Michigan, 55

MINNESOTA
- Mayo Clinic, 26
- University of Minnesota, 55

MISSOURI
- St. Louis University, Division of Health and Hospital Service, 55
- Washington University, School of Medicine, 53

NEW YORK
- Albany Hospital (Russell Sage College), 18
- Columbia University, College of Physicians and Surgeons, 68
- New York University, School of Education, 155
- University of Buffalo, Chronic Disease Research Institute, 32

NORTH CAROLINA
- Duke University, 23

OHIO
- Frank E. Bunts Educational Institute (Cleveland Clinic Hospital), 38

PENNSYLVANIA
- The D. T. Watson School of Physiatrics, 23
- University of Pennsylvania, School of Auxiliary Medical Services, Division of Physical Therapy, 68

TEXAS
- Brooke Army Medical Center, Medical Field Service School, 22
- Grady Vaughn School of Physical Therapy, Baylor University Hospital, 7
- Hermann Hospital, 12
- University of Texas, School of Medicine, 6

VIRGINIA
- Medical College of Virginia, Baruch Center of Physical Medicine and Rehabilitation, 42
- Richmond Professional Institute, 24 (discontinued)

WISCONSIN
- University of Wisconsin, Medical School, 110

Total enrollment 1,618

Selected References

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The Outlook for Women as Physical Therapists. Bulletin of the Women's Bureau No. 203–1, Revised, Medical Services Series, U. S. Department of Labor, Washington, U. S. Government Printing Office, 1952. 51 p.

Physical Therapy—1952. New York, American Physical Therapy Association, 1952. 19 p. (Mimeo)

The Physical Therapy Review, Education Issue, April 1953, p. 153–196.

24. Education for Public Administration

By ROSCOE C. MARTIN*

PUBLIC ADMINISTRATION is as old as government, that is to say, almost as old as mankind; but the study of public administration as a subject worthy of orderly examination is a product of very recent times, indeed almost of this century. It was as late as 1887 that Woodrow Wilson's historic essay called attention to the promise of systematic study of administration.[1] But if public administration was a latecomer to the academic scene, it lost little time in achieving a place of importance; for following hard on the heels of Wilson came an evergrowing army of devotees to write and speak of the new (or newly identified) subject. Considering the prodigious labors which have gone into analysis of the field in the last half century, it is strange that something approaching consensus regarding its nature and general contour did not emerge years ago. In fact, public administration remains a volatile, almost explosively expanding subject for study (as well as field for action) to this day. It seems appropriate to begin with an examination of the subject.

The Field of Public Administration

Public administration concerns government; more specifically, it concerns the action side of government. An early author identified public administration with the management of men and materials in the pursuit of the purposes of the state. A recent writer, employing the analogy of two men cooperating to move a boulder, observed that administration enters into an activity when two or more persons collaborate to perform a task which no one of them could perform individually. Public administration therefore has to do primarily with the executive branch of the government, and it centers on the collective activities of the men and women who transact the everyday affairs of government. Its principal focus is men at work. It occurs at every level and in every agency of government where there are tasks to be done and staffs to do them. Among the manifold facets of the administrative process are defining the job at hand, establishing an organization adequate to do it, laying out the work in logical units, directing the efforts of the employees to the ends sought, and providing (and managing) the funds necessary to finance the operation.

Political science has long been regarded as the parent field of which public administration is a division, so far at least as its association with the universities is concerned. It was a political scientist, Woodrow Wilson, who first identified administration in modern times as a subject worthy of systematic analysis. Further, the department of political science customarily provides the campus mooring mast for public administration: it is there that the professors and the courses and the students of administration normally are found. There is a strong and growing sentiment in favor of a reorientation which would provide a base for public administration in the social sciences, broadly defined, rather than in political science as such. Thus recent writers have pointed out the contributions which cultural anthropology, sociology, and social psychology are prepared to make to the field; they have also emphasized the historical foundations of administration, and the economic content of the subject as well. The basic orientation of public administration nevertheless is still toward political science, even though the significance of the other social sciences for administration is increasingly recognized.

Public administration may be said, then, to be a subject concerned especially with the executive branch of the government, whose content relates principally to the ordering of group activity in the pursuit of a joint or collective enterprise, and whose traditional academic base has been the department of political science with (latterly) strong social science overtones.

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[1] Woodrow Wilson, "The Study of Administration," *Political Science Quarterly*, vol. 2, p. 197-272 (June 1887).

The Public Service

It is probably safe to assume that most of the men and women who work for government are not aware that they are engaged in a calling which has been dignified by the term "public administration," yet the public service lies at the very core of public administration. Table 50 provides the basis for a brief and very general analysis of public employment in the United States since 1940. There it may be seen that, in 1953, there were approximately 7.1 million civilian workers employed by all units of government, Federal, State, and local. These 7.1 million government employees, their organization, their relationships, and the proper ordering of their efforts, provide the subject-matter content of public administration. Of high importance also is the fact that public employment provides the reservoir of employment opportunities on which the universities beam their programs of educational preparation for public administration.

Several aspects of public employment are worthy of special mention. First, the public service is expanding rapidly (table 50); and both the fact and the direction of that expansion are of interest here. The growth in the total number of civilian public employees from 1940 to 1953 was approximately 59 percent. The Federal civil service increased from 150,000 civilian employees in 1885 to almost 600,000 in 1920 to more than 1.1 million in 1940; and from 1940 to 1953 the growth was considerably more than 100 percent. It is worthy of particular note that, although the Federal civil service grew faster than the State and local services from 1940 to 1953, the increase since 1950 has been greater in State and local public employment than in Federal: the growths are almost 15 percent for State and local employment, somewhat more than 12 percent for Federal—and this notwithstanding the impetus to Federal employment provided by the conflict in Korea.

Second, the activities of government grow more and more complex. There may have been a time, as President Jackson averred, when the duties of government were so simple that any intelligent citizen could learn readily to discharge them; but that day certainly has passed, and long since. Government has fallen victim, along with most other important enterprises, to the technological revolution. Further, the constantly expanding field of public action has brought government to grips with technical problems in fields to which a few short years ago it was almost a total stranger. The increasing complexity of governmental activity is inescapably related to the subject of educational preparation for public administration.

Table 50.—Civilian public employees for selected years, 1940–53 (In thousands)

Level	Number employed in—			
	1940	1945	1950	1953
Total	4,474	6,556	6,402	7,094
Federal	1,128	3,375	2,117	2,384
State and local	3,346	3,181	4,285	4,710
School	1,320	1,267	1,723	1,963
Nonschool	2,026	1,914	2,562	2,747
State	551	473	745	786
Local	1,475	1,441	1,817	1,961

Source: Bureau of the Census, "Public Employment in October 1953" (Release No. G-GE53—No. 4), table 1, p. 2.

Third, several major categories of public employees may be eliminated from consideration forthwith, so far as the present discussion is concerned. The first group comprises all personnel whose loyalties are to the "professions," as that term is commonly understood. Thus the almost 2,000,000 public employees engaged in educational activities may be ignored; for educational administration is considered a thing apart from public administration, particularly by the educators themselves. What is true of public school administrators and teachers applies almost equally to the representatives of many other generally accepted professions: doctors, engineers, lawyers, and so on. These employees are governed by the procedures and requirements of their professional associations; they are, so to speak, in public administration but not of it. A second category of only incidental concern here includes that portion of the public service which is not subject to competition in appointment. Its scope and influence have diminished over the years. In 1939 only 68 percent of all Federal civilian employees were subject to the competitive requirements of civil service law; by

3, the coverage of competition had increased to percent. The trend in State and local employment is in the same direction, with "Merit System" principles gaining increasing acceptance on every hand. A third group takes in the many thousands of clerks, typists, messengers, operators of motor vehicles, and custodial personnel, to cite only a few examples, whose duties are so largely routine as to be subadministrative in character. In this group those concerned with education for public administration have only a very limited interest.

But when all such persons have been eliminated, there remain some hundreds of thousands of civilian public employees who fall within the classified (competitive) civil service and whose duties are administrative in character. These public servants and the positions which they fill are the primary concern of those interested in educational preparation for public administration.

Is Public Administration a Profession?

The rapid expansion of government in the last two decades has brought in its wake a corresponding growth in nongovernmental organizations having to do with public administration. By 1948, there were some 2,300 such organizations, 565 of them national, 80 regional, and 1,654 State. Of the 565 national organizations, 134 were organizations of or for officials and administrators, 290 were professional and technical societies, and 141 were citizen organizations. Far and away the most important institutional development in the field is found in the cluster of more than 20 national organizations, most of them federations of State and local associations, which have headquarters at 1313 East 60th Street, Chicago. These organizations, with their manifold and close relations with government and with memberships (both personal and institutional) running into the hundreds of thousands, constitute the organizational nexus for public administration.

Since Woodrow Wilson's pioneering article in 87, the literature dealing with the subject of public administration has grown to literally flood proportions. The first books in the field dealt with administrative law rather than with public administration as such; but the legal levees were soon breached in favor of wide and varied treatment of the subject. He who feels the urge to read or study about public administration nowadays will encounter no dearth of written materials unless he enters into a highly specialized field. His problem will be to select with care, lest he be swamped in the deluge of books monographs, survey reports, and periodical articles.

Manifestly there is a great and growing interest in public administration, much of it undeniably professional. It is fair to inquire whether the prevailing trends have brought public administration to the status of a professional undertaking. Put succinctly, is public administration a profession?

The answer is, measured by the standards thought appropriate for application to the recognized professions, it is not. The public service, as is frequently pointed out, comprises (or at any rate includes representatives of) many professions: medicine, law, engineering, architecture, and so on. But even that segment of public administration whose practitioners perform peculiarly public and peculiarly administrative duties may not be said to have achieved professional standing—not by the standards customarily applied. There is no method of certification or licensure for public administrators, no systematic way to gain access to the public service. There is no basic program of education which is recognized and accepted as prerequisite to public employment. There is no professional organization to which a majority (or even a sizable minority) belong. There is no single and overall professional journal of wide circulation. Public administration thus falls short of professional status by the usual standards.

But all is not lost. The rapid spread of the Merit System at all levels of government in recent years represents a heartening trend in public personnel practice. The recognition of the value of general educational preparation for administration for prospective young civil servants likewise represents a significant development, more important in promise than (to date) in realization. The number of positions involved (for example, in the case of the Federal civil service, in the Junior Management Assistant category) is small, but the principle is large.

There is, moreover, a significant organizational development of which special notice should be taken. The American Society for Public Administration, now in its 15th year, gives promise of developing into the kind of general organization of administrators whose absence has been noted above. The Society boasts a membership of only some 4,500, which some would say represents a very modest growth over a 15-year period. At the same time it is undoubtedly true that the influence of the Society has far outstripped its physical growth. It sponsors an annual 3-day conference where administrators and scholars join to discuss administrative problems; it publishes the quarterly *Public Administration Review*, which has established itself as the authoritative general journal in the field; and it maintains contact with some 50 affiliated chapters scattered throughout the country. The American Society for Public Administration provides an important organizational focus for public administration in its march down "the long road to profession."

The Study of Public Administration

There are at least two major avenues by which to approach the study of public administration. The first may be called the program approach; here the student examines administration through the eyes of the administrator(s) responsible for a particular activity or duty; what are the problems of public administration from the point of view of the Director of the Bureau of the Census? the State superintendent of prisons? the (municipal) chief of police? Each of these wrestles with the familiar problems of administration—planning, directing, budgeting, and the rest—in his way and at his level; but each, it may be assumed, is intimately concerned not only with administration as a process but also, and primarily, with the task of seeing that the policy of his agency is translated into action—that is, of seeing that the job for which his agency is responsible gets done. There are those who maintain that administration cannot be studied meaningfully apart from the program to be administered, and few today would reject this view outright. As has been observed, an administrator does not administer only; he administers something, and the something which he administers is highly important to the manner of administration.

Complete acceptance of the program approach to public administration would, however, pretty well destroy the notion of general administration, and of education for general administration. Education for public administration would be handled through the specialty subjects—through law, engineering, medicine, forestry, and so on—and courses (more likely, only a course or two) in public administration would be introduced into the various professional schools along with the substantive courses now offered. An occasional course in public administration has indeed been smuggled into the professional curriculums; but it may be predicted with considerable safety that it will be a long time before place is made as a matter of standard practice in the professional schools for systematic courses in pub administration.

A second major approach to the study of pub administration rests on the concept of administration as management. According to this school, there a certain managerial processes which run through the whole of administration, whatever the progra Chief among these are planning, organizing, administering personnel, directing and coordinating, budgeting, and reporting. Each of these processes, th argument goes, is sufficiently alike from program program to justify special study of the process itself.

The management approach to public administration enjoyed almost universal acceptance among the specialists in that field to about 15 years ago, when the program approach began to clamor more and more insistently for a hearing. Today those who speak authoritatively for public administration generally accept the concept of management as a process running through all administration, while recognizing at the same time that administration does not take place in a vacuum and that there is a close and necessary relation between the process of administration and the program to be administered.

In the curriculums of the universities one will find a number of concentrations based on the program approach. There are, for example, occasional courses of study constructed around police administration, recreation administration, housing administration, city management, and so on. Most educational preparation for public administration, however, accepts and builds upon the concept of public administration as management. Thus the curriculum abounds in courses treating of planning, budgeting, fiscal policy, organization and management, personnel administration, governmental accounting, statistics—the list is long but these are perhaps the more important of the "general" administrative courses customarily found. It is clear that the universities have accepted the concept of public administration as a process in setting up their educational programs for the public service, for the emphasis is on management rather than program,

Education and Training

An analysis of education for public administration may treat of the educational preparation of the prospective administrator before he enters public employment. Such education is anticipatory, though it may be added that there is no guarantee that its beneficiary will ever achieve his ambition to become a civil servant. The terms "preservice" istrators and scholars join to discuss administrative problems; it publishes the quarterly *Public Administration Review*, which has established itself as the authoritative general journal in the field; and it maintains contact with some 50 affiliated chapters scattered throughout the country. The American Society for Public Administration provides an important organizational focus for public administration in its march down "the long road to profession."

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Contrariwise, the educational process may be carried into the public service, and short courses, institutes, correspondence courses, evening courses, and even regular classroom courses (on a partial leave-of-absence basis) may be made available to the public servant. The terms "inservice" and "postentry" are normally applied to the educational process at this stage. The courses taken here are usually (though by no means always) vocational or technical; they are more likely to emphasize job content than general education. The term "training" therefore would seem more appropriate for use here than the term "education": at this stage, the process is one of postentry training in, rather than preentry education for, public administration.

In this essay the author has, by definition, eliminated a number of the problems which he might otherwise have been expected to deal with; for here, he treats only of preentry (preservice) education for public service, and that only as administered by colleges and universities; whence the title might well be "Educational Preparation for Public Administration."[2]

Educational Preparation: Background

Educational preparation for public administration goes back to the very beginnings of education in this country, in the sense that considerable numbers of university graduates have always found their way into the public service. The professional schools in particular have long produced their toll of graduates who have entered into public employment; and the civil service was well staffed with lawyers, doctors, engineers, accountants, foresters, and educators long before the term "public administration" came into general use. Two observations may be made about these early recruits from the universities. First, they were not educated for public administration, but for professional careers; hence (normally) no special efforts were made during their student days to acquaint them with government or administration. Second, and as a corollary, they entered the public service as professional men, not as administrators. Many such professional men grew into competent, some even brilliant, administrators; but administration and administrative affairs remained incidental to professional considerations. They were professional men first, administrators (where administrators at all) second—often a poor second.

The lively discussion which attended the growth of public administration in the early days of this century inevitably resulted in widespread interest in the subject of education for public administration. This interest found outlet in a number of directions, but notably in a series of conferences called to consider the subject. Among the first of these was the National Conference on Universities and Public Service, convened in 1914 in New York City. A second conference worthy of special mention was that held at the University of Minnesota in 1931 on University Training for the National Service. A third met at Princeton in 1935. Two years later Harvard University called a series of conferences as a step in the further development of plans then taking shape for its proposed school of public administration. These conferences (along with several others not mentioned) exerted a powerful influence on the direction of American thinking about the public service and the relations of the universities to it.

Meanwhile, developments within the universities paralleled those outside. Courses in public administration (normally offered in the department of political science), which appeared early in the century, multiplied rapidly. The Training School for Public Service, founded in 1911 by the New York Bureau of Municipal Research, was transferred to Syracuse University in 1924 as the School of Citizenship and Public Affairs—the first school founded, so far as is known, with a primary orientation toward the field of public administration. A second appeared in 1929 in the School of Citizenship (now the School of Public Administration) at the University of Southern California. By 1930, then, the universities had provided substantial evidence of their interest in and their willingness to assume some responsibility for educational preparation for public administration.

Table 51 summarizes two aspects of the growth of education for public administration from 1920 to 1953. It indicates that at the earlier date there were only 8 colleges and universities engaged in education for public administration. By 1930 the number of institutions offering instruction had increased to 31, by 1940 to 79, and by 1948 to 117. The figure for 1953 is not strictly comparable, since it covers only institutions offering graduate instruction. It may be surmised, on the basis of experience, that approximately 130 institutions were offering undergraduate and graduate preparation for public administration in 1953. The number of States and Territories represented by these institutions increased from 7 in 1920 to 45 in 1953. In 1953 almost every State had at least one college or university engaged in education for public administration.

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[2] Here acknowledgment is due the originator of this title, which has been employed for years by Public Administration Service in connection with one of its very useful occasional publications (cited in the Selected References at the end of this chapter). This title was used when the chapter was originally published in Higher Education, Vol. X, p. 135 ff., May 1954.

Table 51.—Institutions offering educational preparation for public administration, undergraduate and graduate, with number of States represented, for specified years, 1920–53

Year	Number of institutions	Number of States and Territories
1920	8	7
1930	31	16
1940	79	32
1948	117	44
1953*	105	45

*Graduate only.

Source: *Educational Preparation for Public Administration*, (Chicago: Public Administration Service, editions of 1941, 1948, and 1952.

Educational Preparation: Organization

Table 52 presents a summary of graduate educational preparation for public administration in 1952–53. The material on which this summary rests was gathered by questionnaire. The resulting report (*Educational Preparation for Public Administration: A Catalog of Graduate Programs, 1952–53*)[1] very likely is not complete, since a questionnaire return is almost never complete; but every important educational program is represented in the compilation.

The table indicates that the universities continue to place chief reliance for instruction on their departments of political science, as they have from the beginning. The combined department (including political science), the bureau of public administration, and the institute share three ways in second-place honors. It is significant that, after half a century of instructional experience in public administration, the universities have seen fit to establish only six separate schools for instruction in that subject. There is considerable talk in public administration circles about the combination of business and public administration, yet the summary lists only three separate schools formally combining the two fields. The remaining institutional arrangements are of a miscellaneous character, and they include half a dozen different kinds of structures. The evidence is overwhelming that the universities, in approaching the problem of plannin their educational programs in public administratio have preferred to utilize existing facilities rather tha to create new ones.

Table 52.—Graduate educational preparation for pu administration: a summary, 1952–53

Number of colleges and universities reporting	
Number of States and Territories represented	
Organization for instruction: Number of institutions employing—	
1. Department of political science (or Government)	
2. Combined department (including political science)	
3. Bureau of public administration (or equivalent)	
4. Institute	
5. School of public administration	
6. School of business and public administration	
7. Training program in public administration	
8. School of government	
9. Miscellaneous (special schools and departments, faculties, curriculums, committees, centers)*	
Degrees: Number of institutions offering the degree of—	
1. Master of arts	
2. Master of science	
3. Master of public administration	
4. Special master's	
5. Doctor of philosophy	
6. Doctor of public administration	
7. Special doctorate	
8. Diploma or certificate	
Internship and/or field training: Number of institutions employing	

*Since some institutions employ more than one organizational device, the number of vehicles for instruction listed (119) does not equal the number of institutions reporting (105).

Source: *Educational Preparation for Public Administration: A Catalog of Graduate Programs, 1952–53* (Chicago, Public Administration Service, 1952).

A study of degrees offered (also summarized i table 52) will prove rewarding in this connection. I is highly significant that 89 of the 105 institution reporting offer the conventional master of art degree, and that 45 offer the historical doctor o philosophy. Fifteen give the master of scienc (sometimes followed by the phrase "in public administration"), but only 13 offer the degree of maste of public administration and only 4 the doctorate i public administration. It may be concluded, therefore, that while some institutions engaging in education for public administration have devised ne degrees to suit the new demands, most continue t rely on the traditional master of arts and doctor o philosophy degrees.

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[1] See Selected References.

A little more than half of the colleges and universities reporting employ a variety of field training in addition to course work. Frequently this takes the form of an internship, under which the student performs an administrative work assignment under supervision for a limited period. The internship (or equivalent) represents the universities' effort to combine classroom teaching with on-the-job experience.

Further tangible evidence of the universities' interest in public administration is found in the financial (and other) assistance available to graduate students in the field. Recently the Public Administration Clearing House sent out questionnaires to 177 universities, colleges, and other institutions known or presumed to be engaged in education for public administration. The 85 replies indicated the availability (for 1951-52) of 57 fellowships, 39 scholarships, 57 assistantships, and 3 internships. Graduate students receiving these awards were expected to study public administration: there were other miscellaneous requirements as well, but this was the stipulation most generally found.

Educational Preparation: Product

Those who speak with some authority about educational policy generally agree that specialization in public administration at the undergraduate level is undesirable. Individuals repeatedly have taken stands against such specialization, and conferences have passed resolutions condemning it; yet many colleges grant the bachelor's degree in public administration, and apparently their number grows. The first separate count of such institutions and the degrees granted by them, so far as is known, was made by the Office of Education only 4 years ago. As table 53 shows, in the school year 1949-50, 25 institutions granted 273 bachelor's and first professional degrees in public administration. By 1952-53, the numbers had grown to 28 and 309 respectively, an increase of somewhat more than 10 percent in the number of institutions and well over 13 percent in the number of degrees granted. Further in 1952-53 the colleges conferred 5,086 bachelor's degrees in political science, and many of these undoubtedly reflected at least some specialization in public administration. Hundreds of colleges granted undergraduate degrees in political science in 1952-53. It is likely, therefore, that the 28 institutions included in table 53 constitute the minimum of those encouraging (or permitting) undergraduate specialization in public administration.

Table 53.—Institutions conferring degrees in public administration and earned degrees in public administration conferred, 1949-50 and 1952-53

Degree	Number of institutions		Number of degrees	
	1949-50	1952-53	1949-50	1952-53
Bachelor's and first professional degree	25	28	273	309
Master's and second professional degree	21	22	190	256
Doctor's degree	3	3	14	15
Total degrees conferred	-------	-------	477	580

Source: Office of Education, annual reports of earned degrees.

Table 53 also indicates that in 1949-50, 204 graduate degrees in public administration were conferred, 190 at the master's level, 14 at the doctor's. By 1952-53, the total number had increased to 271, the master's figure to 256 (an increase of 35 percent), the doctor's to 15.

All degrees granted in public administration increased from 477 in 1949-50 to 580 in 1952-53. The increase of almost 22 percent is quite substantial, particularly in view of the fact that college and university enrollments in general declined considerably from 1949 to 1953.

In final summary on the end product of education for public administration, three observations appear pertinent. First, large numbers of graduates of the professional schools undoubtedly continue to find their way into the public service without benefit of exposure to courses in public administration. Second, an overwhelming majority of the colleges and universities proceed with "business as usual," offering instruction in the regular departments (particularly the department of political science) and conferring the traditional academic degrees, as in the past. Many of their graduates, though protected from undergraduate specialization in public administration, take general courses in public administration and so undergo some association with that field during their college careers. Third, the colleges and universities give increasing attention to educational preparation for public administration, undergraduate as well as graduate. The number of degrees granted in the field is still small, but it is growing, and so is the number of institutions engaged in special instruction in public administration.

Problems

A number of problems in educational preparation for public administration are implicit in the foregoing remarks. One problem is epitomized in the question, Should educational preparation for public administration be pitched at both undergraduate and graduate levels, or should it be confined to graduate study? A second problem, again stated in the form of a question, is this: Should the universities provide technical or "specialty" training, or should they emphasize courses and programs of a more general character? A third has to do with teaching methods and materials. More and more teachers appear to believe that something approaching a clinical method is to be preferred over straight textbook instruction, and they seek to construct such a method through development and use of cases. The case approach, though new, has already established itself as a strong supplement to the textbook method: one day the casebook may very well supplant the textbook, particularly for graduate instruction. Yet a fourth problem turns on organization for teaching public administration. Certainly continued utilization of the traditional teaching department, political science or other, is not the complete or final answer. What seems to be required is a new vehicle for mounting a meaningful cross-departmental curriculum in public administration, a vehicle which currently is the object of study and experimentation in many institutions and of satisfaction in but few.

The four problems here identified are of a workaday, professional character. They assume that educational preparation for public administration is here to stay, and they rest on some simple implications growing from that assumption. In the aggregate, they may have the effect of placing education for public administration in a worse light than it deserves, of causing it to seem more uncertain and less positive than it is. Much good and some excellent work is being done in the field of education for public administration, and this should be said firmly. But the uncertainties, the absence of direction, the lack of goal—in short, the problems identified above and others like them—are present, too. They also need to be recognized.

There is yet a fifth problem, this one not primarily educational in character, which requires mention. It is the spirit of anti-intellectualism currently abroad in the land. That this spirit is universally dangerous goes without saying, but that it constitutes a special threat to the subject at hand needs to be emphasized. If education for public administration is to serve effectively the end it seeks to serve, a spirit of mutual good will must obtain between the universities and the Government. The colleges and universities certainly are not above criticism; they are, indeed, properly subject to responsible criticism, and most of them welcome it. Indiscriminate and unsupported attacks on institutions and individuals, and even on university graduates as an alleged caste in the public service, however, do not fall within the category of responsible criticism. Among the many evil effects of such attacks are those which will inevitably be suffered by the institutions engaged in education for public administration. The wave of anti-intellectualism indeed has already made itself felt on the university campuses in many subtle and corrosive ways. The one positive step which more than any other would strengthen educational preparation for public administration would be restoration of the mutual confidence and respect which prevailed between government and the universities before the current wave of hysteria set in. This of course requires action rather than mere words. But most of all it requires time.

Editor's Note.—*Owing to the variety of forms of organization of instruction in public administration no list of schools offering such instruction is given.*

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25. Education in Public Health

By G. ST.J. PERROTT[*] and MARJORIE GOOCH[**]

PROFESSIONAL EDUCATION in public health prepares several different groups of workers for public service in health activities. Among these workers are persons who have been trained in medicine, dentistry, nursing, engineering, social work, and the natural and social sciences. Professional education in public health supplements the previous professional, scientific, and social science education of students by providing the specialized training required for their public health activities.

Development of Public Health Measures

Although throughout recorded history communities have taken measures to protect the health of their citizens, developments in the last century have laid the foundation for most current concepts of public health needs and public health techniques. In this period, public health practice has expanded with the increase in scientific knowledge, with changes in health problems, and with the evolution of social philosophy.

The first major advance toward the present public health movement occurred in the mid-1800's with the discovery of the relationship between environment and health. Chadwick's report on the *Sanitary Conditions of the Laboring Population of Great Britain* in 1842 described the association of ill health and unfavorable environmental conditions. Studies in England and elsewhere and improved methods in environmental sanitation resulted in practical control measures for many of the infectious diseases even before the discovery of their cause. Environmental sanitation thus became the first component of modern public health practice, a new technology calling for engineers, architects, and chemists.

The identification of specific bacteria as the causative agents of a number of infectious diseases by Pasteur, Koch, and their pupils, and Metchnikov's clarification of some of the mechanisms of the body's defense against disease lent impetus to the public health movement. As public health practice expanded to encompass this new knowledge, the skills of physicians and persons trained in bacteriology, epidemiology, and related disciplines were needed and used.

As the acute communicable diseases have been brought under control, life expectancy has increased, the age distribution of the population has shifted, and the important causes of mortality have changed. To keep pace with these changes, public health practice has also changed. The growing recognition of the interdependence of individual and community welfare stimulated this change. This phase of development required further additions to the corps of technical public health personnel. Nurses, social scientists, social workers, and administrators became essential.

Public health activities, in short, represent social organization designed to promote the health of the community. One of the most widely accepted definitions of public health calls it " . . . the science and art of preventing disease, prolonging life, and promoting physical and mental health and efficiency through organized community efforts."[1] A definition of this scope must include many different kinds of services which may be summarized as follows: Recording and analysis of health data; health education and information; supervision and regulation; provision of direct environmental services; administration of personal health services; operation of health facilities; and coordination of community activities and resources.

Provision of Public Health Services

To provide the wide variety of services that are administered by a large number of agencies, peronnel representing many fields of specialization are required. Physicians, nurses, sanitarians, and engineers form the core of public health personnel, but many other special groups also participate, such as dentists, health educators, laboratory workers, nutritionists, social workers, statisticians, and veterinarians.

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[1] C.-E. A. Winslow, The Evolution of Public Health and Its Objectives. *Public Health in the World Today*, edited by James Stevens Simmons. Cambridge. Harvard University Press, 1949.

Local, State, Federal, and international governmental agencies and voluntary organizations provide a wide range of public health services. The number of full-time local health units and the scope of their activities have increased substantially since the first such unit was organized. In general, the local governmental health agencies provide most of the direct services to the people.

All State Governments consider public health to be one of their major functions, and, although many units of State Government participate in health activities, the health department is the agency primarily responsible. The present trend is for the State public health agency to provide consultation and advisory services to the local agencies and not direct services to the people.

Although several agencies of the Federal Government are concerned with specialized aspects of public health, most of the Federal public health responsibilities for the civilian population are centered in the U. S. Department of Health, Education, and Welfare. Several of its constituent units have important health functions, but the Children's Bureau and the Public Health Service are most directly concerned. These agencies administer grants-in-aid programs to the States and provide consultation to them. The Public Health Service also conducts and supports research and training in the medical and related sciences, and in public health methods and administration.

The World Health Organization, a specialized agency of the United Nations, is the directing and coordinating authority in international aspects of health. The Organization provides technical and advisory services in many phases of public health, such as epidemiology, statistics, standardization of drugs, sanitation, maternal and child health, and communicable disease control. The provision of fellowships to public health workers is another major function of this organization.

In addition to these official governmental agencies many unofficial or voluntary organizations contribute a wide range of health services. The voluntary health agencies typically are designed to combat particular diseases or disabilities that affect large numbers of people, but some have widened their scope to include broad educational and direct-service programs. These agencies vary greatly in size and organization. Some, such as the American Cancer Society, the National Foundation for Infantile Paralysis, and the National Tuberculosis Association, are large national organizations with many paid employees. Other voluntary organizations are small and local, depending largely on unpaid personnel to carry out their programs.

No accurate count is available of the total number of persons employed in providing public health services. In 1953, State and local health departments employed full-time more than 54,000 persons, of whom more than half were in professional positions.[2] Local health departments, particularly, also employ many other persons on a part-time basis, for example, clinic physicians. The number of public health workers employed by other State and local governmental agencies, by the Federal Government, by international agencies, or by industry is not known but must be in the thousands. Voluntary organizations employ some 20,000 paid workers who are augmented by perhaps as many as a million unpaid voluntary workers.[3] Many other persons with training, experience, or special interest in public health are engaged in teaching or research.

The distribution of different kinds of workers employed by the State and local health departments is shown in table 54.

Professional Associations and Publications

Each of the professions represented in public health work has its own professional association and journal that may cover public health as well as the special aspects of its field of practice. These professional associations have played a significant part in accelerating the evolution of public health, in developing a close community of interest among the participating professions, and in providing forums for the exchange of experiences.

In addition, all the public health professions are represented in the major professional organization of public health workers as such—the American Public Health Association which was organized in 1872. In 1953, it had approximately 13,000 members distributed among 13 sections devoted to various

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[2] Unpublished data from Division of State Grants, Public Health Service, U. S. Department of Health, Education, and Welfare.

[3] Selskar M. Gunn and Philip S. Platt, *Voluntary Health Agencies.* New York, The Ronald Press Co., 1945. 364 p.

Table 54.—Full-time personnel employed by State and local health departments, as of January 1, 1953

Classification	Number	Percent
All classifications	54,619	100.0
Physicians	2,134	3.9
Public health and clinic nurses	14,552	26.6
Dentists	334	.6
Dental hygienists	441	.8
Engineers	1,071	2.0
Professional sanitarians and other sanitation personnel	8,004	14.7
Veterinarians	365	.7
Laboratory personnel	2,998	5.5
Health educators	497	.9
Nutritionists	239	.4
Medical and psychiatric social workers	340	.6
Analysts and statisticians	404	.7
Public health investigators	798	1.5
X-ray technicians	604	1.1
Physical therapists	150	.3
Clerical, administrative, and fiscal personnel	15,776	28.9
Maintenance, service, and custodial personnel	4,033	7.4
All others	1,879	3.4

Source: Division of State Grants, Public Health Service. February 1954 Processed.

phases of public health work. The association publishes the monthly *American Journal of Public Health*, holds annual meetings, and conducts many investigations and field studies.

Four standing committees (Administrative Practice, Eligibility, Professional Education, Research and Standards) with their subcommittees and special section-committees provide the framework and impetus for the investigations and studies. Of most direct importance to the education of health workers is the Committee on Professional Education. It recommends educational qualifications for the various types of public health workers; sponsors the Professional Examination Service, which develops written tests used by State merit systems in selecting public health personnel; and carries on activities for accrediting public health courses.

The *American Journal of Public Health* publishes many of the papers presented at the association's annual meetings, as well as committee reports and policy statements of the association. Another journal that covers all major aspects of public health administration, practice, and research is *Public Health Reports*, published by the United States Public Health Service. It had a record of 66 years of continuous publication as a weekly before conversion to a monthly journal in January 1952.

Schools of Public Health

Early in their development, public health agen were staffed by persons who developed their kno edge and skills in this field through practical expe ence and apprenticeship. The categories of perso nel participating in community health programs w limited, and their responsibilities and qualificati were poorly defined. As the numbers of pers employed in community health services increa and as their professional responsibilities became mo clearly fixed, opportunities for academic professio training gradually emerged. Professional educatio in public health is today offered as graduate wo chiefly by 10 schools in the United States and two i Canada that give accredited degree courses. (S table 55.)

Most of the institutions now known as schools public health evolved from preexisting courses i public health, preventive medicine, sanitation, an related subjects, and existed first as departments medical schools or other university units. Becau of this evolutionary process it is not easy to fi date that marks the first school of public health, b apparently no facilities existed in the United State for specialized training or education in this fie before 1910.[4]

During the next 25 years, a few schools of pub health and several departments of public health i university medical or graduate schools were orga ized—in most cases leading to public health d grees or certificates. These courses varied grea in length, admission requirements, curriculums, fa cilities, and number and qualification of facu members.

Some schools are organized as independent un of the university, some as units within organi divisions of medical sciences, and still others a medical school departments. The place of pub health instruction within the university struct affects to some extent the interchange of instruct between the school of public health and other u of the university.

Four of the universities in the United States w which the schools of public health are affiliated a State supported, and six are privately controlled stitutions. As is characteristic of higher educat institutions generally, the privately controlled schools are concentrated in the eastern part of the country.

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[4] John J. Hanlon, *Principles of Public Health Administration.* St. Lou C. V. Mosby Co., 1950. 506 p.

The schools are organized into an association known as The Association of Schools of Public Health. Seven schools (Columbia University, Harvard University, Johns Hopkins University, University of Michigan, University of North Carolina, Yale University, and University of Toronto) in 1941 formed this association for the exchange of information of mutual interest concerning the graduate education of professional personnel for service in public health and to promote and improve the education and training of such personnel. Membership in the association is not limited to accredited schools.

Table 55.—Institutions with public health courses accredited for the academic year 1953–54

Institution (University)	Date of organization [2]	Degrees for which accredited [1]		
		Master of public health (M. P. H.)	Doctor of public health (Dr. P. H.)	Master's degree in public health education other than the M. P. H.
California	1944	X	X	----------
Columbia	1921	X	X	X
Harvard	1921	X	X	X
Johns Hopkins	1916	X	X	----------
Michigan	1941	X	X	----------
Minnesota	1944	X	------	X
North Carolina	1940	X	X	X
Pittsburgh	1948	X	X	----------
Tulane	1947	X	X	----------
Yale	1915	X	X	X

[1] *American Journal of Public Health*, vol. 43, No. 7, July 1953; p. 944–945.

[2] Date of establishment of present school organization as given in the catalogs of the schools.

Accreditation

The Social Security Act of 1935 provided funds to the States for training health personnel and so increased the need for training facilities. Many schools and universities proposed establishing additional courses, but governmental agencies responsible for approving the use of training funds had no way of discriminating between good and poor schools.

Consequently, in 1945 the Association of Schools of Public Health and the United States Public Health Service decided that a plan for accreditation of public health courses was needed. The American Public Health Association agreed to undertake the task. The review of facilities and programs is made by the Committee on Professional Education with the final action being taken by the Executive Board of the American Public Health Association.

In 1947, the Executive Board of the American Public Health Association released the first list of institutions accredited for the master of public health and doctor of public health degrees. Table 55 shows the schools in the United States that had accredited programs for the academic year 1953–54. In Canada the School of Hygiene of the University of Toronto and the School of Hygiene of the University of Montreal have accredited programs offering a diploma in public health, equivalent to the master of public health degree.

Criteria for accreditation were first published in 1946 and were revised slightly in 1948.[5] Accreditation is given separately for the master of public health and the doctor of public health degrees. Schools accredited for the master of public health degree may also be accredited for other masters' degrees in public health education.

These criteria cover general university status, essential faculty, housing and other facilities, availability of health units for demonstration, admission requirements for students, general course requirements, adequacy of curriculum, and opportunities for advanced research and specialization. Only general standards concerning curriculum content were established, assuring the schools wide latitude for experimentation in organizing instruction.

The accreditation is made annually and is based on information collected by the American Public Health Association's Consultant on Accreditation of Schools of Public Health. This information is obtained either by visiting the schools or by written schedules.[6]

Educational Surveys and Studies

Aside from the studies made for accreditation purposes, the only major study of the accredited schools was made in 1950 by the Division of Public Health Methods of the Public Health Service.[7] This study was undertaken at the request of the Association of Schools of Public Health to provide descriptive data that would be useful to the schools themselves and their parent universities in planning the future development of professional education in public health.

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[5] American Public Health Association, Committee on Professional Education, Revised Criteria for Accreditation of Public Health Courses. *American Journal of Public Health*, vol. 39, No. 2, February 1949, p. 230–232.

[6] Winslow, C.-E. A. *The Accreditation of North American Schools of Public Health.* New York, American Public Health Association, Inc., 1953, 44 p.

[7] Leonard S. Rosenfeld, Marjorie Gooch, *and* Oscar H. Levine, *Report on Schools of Public Health in the United States*, Based on a Survey of Schools of Public Health in 1950. Public Health Service Publication No. 276. Washington, U. S. Government Printing Office, 1953. 110 p.

The study, which related to the academic year 1949–50, covered nine schools—omitting Pittsburgh which had no public health students formally enrolled for that year. Comparable information was gathered for each school concerning its programs of instruction, research, and services to the community; the organization of the school; staffing; student-body composition; and the financial status and needs. This study brought out the differences among the schools. Although all nine were accredited and, therefore, met certain basic requirements, they showed wide variations in many respects. For example, some schools organized their instruction into relatively few comprehensive courses while others offered many more short courses. Other differences will be apparent in the following discussion of curriculums and degrees.

Functions of Schools of Public Health

The three major functions characteristic of academic institutions—education, research, and community service—are represented in varying proportions in the activities of the various departments of the schools of public health. Although the three areas of activity have certain distinguishing characteristics, these functions are basically interrelated. Research, by broadening and deepening knowledge in the biological and applied sciences related to public health, enriches the content of teaching and stimulates a spirit of investigation and objective observation among both faculty and students. Community service, like the clinical activities of medical education, provides essential teaching material and training ground for students.

Research, both in the laboratory and in the field, is a prominent feature of the schools of public health. During 1949–50, over 40 percent of the time of the full-time faculty was devoted to research work. The infectious diseases—especially poliomyelitis and syphilis—physiology, biochemistry, statistical theory, accidents, industrial hazards, sanitation, mental health, alcoholism, tropical diseases, cancer, and heart diseases are among the subjects being investigated.

The community service responsibilities of the schools include continuation or extension courses in public health, committee and consultation work of individual faculty members, service projects, and community surveys. Demonstrations of community health services and community surveys are frequently conducted by the public health school faculties. Some of these are designed primarily as research projects, while others fall more nearly into the classification of community services.

Graduate Curriculums

The goal of teaching in schools of public health is twofold. The first goal is to give all students an understanding of the health aspects of the interaction of man and his physical, biological, and social environment and broad knowledge of the application of these principles in community health programs. The second goal is to train specialists in various types of community health service. In approaching the second goal there is wide variation in emphasis among the several schools, depending upon a number of factors, such as the location of the school, the needs of the surrounding areas, and the special interests of the faculty. Thus one school has a highly developed department of tropical medicine; others put special stress on health education; and still others emphasize instruction and research in epidemiology. Six schools provide training in hospital administration. To some extent, therefore, students select a school on the basis of their major interests and the facilities for specialized instruction.

Because of the broad scope of public health activities and the variety of professional personnel who receive instruction at schools of public health, the schools find it necessary to offer a wide range of courses. These courses cover some 20 subjects in both the basic public health sciences and the application of public health principles and techniques in public health practice. Basic public health sciences include such subjects as biostatistics, epidemiology, microbiology, nutrition and biochemistry, physiology, and parasitology. The applied subjects include public health administration, environmental sanitation, hospital administration, medical economics, public health education, public health nursing, public health dentistry, industrial hygiene, maternal and child health, mental hygiene, cancer, and venereal disease control.

Students enrolled in the schools of public health may also take some courses given by other units of the university. For example, courses in education, sociology, and some of the clinical branches of medicine are often open to students of public health, permitting supplementation in fields that are not cluded in the regular curriculum of the schools of public health.

Trends in professional education in public health reflect the trends in public health practice. In recent years increasing emphasis has been laid on mental health, socioeconomic factors, adult health, chronic disease, maternal and child health, and public health administration. Less emphasis than formerly is now being placed on instruction in communicable disease control.

Graduate Degrees

The schools of public health offer several different graduate degrees in addition to the master of public health and doctor of public health degrees (table 56). At some of the schools that grant the master of science degree there is little difference between the courses of study taken by candidates for this degree and those taken by candidates for the master of public health degree. In other schools, the programs for the two degrees differ—the master of science being used primarily for work in the public health sciences as distinct from the applied courses.

The minimum entrance requirements for a candidate for the master of public health degree specify that the student must either hold the degree of doctor of medicine, doctor of dental surgery, doctor of veterinary medicine, or an equivalent, from an acceptable institution or hold a bachelor's degree with adequate training in mathematics, and the natural sciences, including chemistry and biology, and with additional professional experience which qualifies him for education in public health.

In all schools candidates for the master of public health degree are required to take basic courses in biostatistics, epidemiology, public health administration, and environmental sanitation. Beyond these minimum requirements, individual schools vary in their requirements and in the amount of time which students have left for elective subjects.

The doctor of public health is generally limited to holders of the doctor of medicine degree, although in exceptional cases other persons may receive this degree. It requires prior completion of basic courses equivalent to those required for the master of public health and the completion of an additional year of graduate academic work involving specialization in a particular area of public health. According to the standards set forth in the accreditation criteria, the student must "indicate capacity to make substantial contributions to the advancement of the science and art of public health by submitting a dissertation in his field." The doctor of science and doctor of philosophy degrees are awarded for advanced, specialized graduate work in the public health sciences.

Table 56.—Graduate degrees offered in schools of public health in the United States

Degree	School
Master of public health	All 10 schools.
Master of science	Columbia, Minnesota, Pittsburgh, Yale.
Master of science in public health	North Carolina.
Master of hospital administration	Minnesota.
Master of science in hygiene	Harvard, Johns Hopkins.
Master of science in sanitary engineering.	North Carolina.
Master of public health in tropical medicine.	Tulane.
Master of industrial hygiene	Harvard.
Doctor of public health	California, Columbia, Harvard, Johns Hopkins, Michigan, North Carolina, Pittsburgh, Tulane, Yale.
Doctor of science in hygiene	Harvard, Johns Hopkins.
Doctor of philosophy	North Carolina, Pittsburgh, Yale.

One academic year is the usual length of the course for the masters' degrees except for the master of science in hygiene degree which requires a minimum of 2 years. At some of the schools, students majoring in hospital administration are required to spend an additional year in a hospital acceptable to the school as an administration resident. The doctor of public health degree requires at least 2 years—one in addition to that required for the master of public health degree. The time requirements for the degrees of doctor of science and doctor of philosophy are the same as for equivalent degrees in other units of the university and vary, depending on the student's preparation and research problem.

Methods of Graduate Instruction

Changes are taking place in the methods of teaching. The current trend is away from formal lectures for large classes and toward informal teaching in small groups.. This kind of teaching helps students with different professional backgrounds to learn to work together as a team. Because of the small numbers of graduate students the schools can arrange courses on almost an individual student basis and assure personal contact between the students and members of the faculty. Although this method of teaching is costly, most public health educators think it is essential if professional workers in public health are to be prepared to assume a broad range of responsibility.

The importance of supervised field training as part of the education of the professional worker in public health is generally recognized. Field training for the student of public health is equivalent to the clinical clerkship and internship for the medical students. It provides the student with an opportunity to apply the principles learned in the formal academic part of his training.

Field experience may be required before a student enrolls at a school of public health, during the academic year, or after completion of the academic year. Requirements are sufficiently flexible at all schools to allow the adaptation of field training arrangements to the student's background or field of special interest. Field training opportunities developed by the schools include observation, field investigation, supervised field experience, and residency training in which the student has an increasing range of responsibility in carrying out the functions of a health agency.

Specialty Training in Public Health

The recently organized American Board of Preventive Medicine, which grants specialty status in this field to physicians who meet its requirements, is influencing the expansion and standardization of postgraduate field training. The board requires a period of residency training in an approved public health agency as one of the requisites for specialty qualification. The board, the American Public Health Association, and the Council on Medical Education and Hospitals of the American Medical Association have jointly accredited certain field training areas for this purpose. Thirteen States, including some 80 local areas, are now approved for 2 years' training in public health which will be recognized for certification of public health specialists.[8]

Undergraduate Curriculums and Degrees

Four of the schools of public health (California, Michigan, Minnesota, North Carolina), in addition to graduate work, offer undergraduate programs leading to a bachelor of science degree. The majority of these undergraduate students are nurses working for a bachelor of science degree in public health nursing. The programs for registered nurses are planned to provide basic preparation in public health nursing that will fit them for positions in official and nonofficial agencies.

Two of the four schools (California, Michigan) offer undergraduate programs in such subjects as sanitation, laboratory techniques, and administration. Some of these undergraduate programs at California have been going on for a number of years and have proved to be a valuable training resource. Other programs are of recent origin and are still somewhat experimental in character. This is particularly true of the undergraduate courses in administration which train students to assist health officers in the nonmedical phases of public health administration or to serve as assistants to hospital administrators.

Schools Other Than Schools of Public Health

For the 12-month period prior to the close of the 1953 spring session, which ended in June in most institutions, 57 schools indicated that they were prepared to offer graduate instruction in sanitary engineering at the master level. Of these, 25 schools actually awarded degrees. In the same year, 25 schools offered doctorate degrees in sanitary engineering, although only 4 actually awarded such degrees.[9]

In addition to the accredited schools of public health, six colleges or universities in the United States and one in Canada offered graduate work in public health during the 1951–52 academic year.[10] At most of these schools, only one phase of training is offered—courses for health educators; for sanitarians; for nurses interested in teaching, supervision, or administration; or for medical technologists. Most of the courses lead to a master's degree.

Students in Graduate Courses

For the academic year 1952–53, 1,172 graduate students were enrolled in public health courses. This figure is not limited to students in the 10 accredited schools of public health but includes students in other graduate public health courses and in the Canadian schools. It is the most recent information available from the Committee on Professional Education of the American Public Health Association, which publishes an annual report on enollment and graduate degrees awarded (table 57). The committee has not routinely reported data from he schools of public health, as such.

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[8] American Medical Association, The Council on Medical Education and Hospitals, Approved Residencies in Preventive Medicine, *Journal of the American Medical Association*, vol. 153, No. 4, Sept. 26, 1953, p. 350.

[9] Miller, Arthur P. *Master's and Doctor's Degrees in Sanitary Engineering* Division of Engineering Resources, Public Health Service, February 24, 1954 Multilithed. 2 p.

[10] American Public Health Association, Committee on Professional Education. Public Health Degrees and Certificates Granted in the United States and Canada During the Academic Year, 1951–52. *American Journal of Public Health*, vol. 43 No. 2, February 1953, p. 216–219.

ble 57.—Graduate students in public health and sanitary engineering, 1943–53

Year	Number of graduate students		
	Public health		Sanitary engineering
	Enrolled	Granted degrees or certificates	Granted degrees
42-43	323	159	28
43-44	396	207	32
44-45	462	270	33
45-46	607	353	62
46-47	724	536	147
47-48	744	528	167
48-49	915	575	141
49-50	1,017	640	151
50-51	1,022	729	159
51-52	1,193	785	114
52-53	1,164	726	107

ource: Data on public health enrollment and degrees published annually in erican *Journal of Public Health*. Data on degrees in sanitary engineering m Division of Engineering Resources, Public Health Service.

The problem of determining the enrollment in hools of public health is not simple. Some of the ficulties are implicit in the administrative place of e schools in the university structure. For example, ne students may take most of their courses in the hool of public health and yet their degrees may be anted by some other school of the university. In ch instances, both schools may claim the students, for some purposes they may be included in enroll-ent figures of the school of public health and for ne purposes, not.

Some schools have a fairly large number of students o spread their program of study over more than 1 ar. They may be full-time students for part of a ar, or they may take no more than one or two rses during any given term. There are other t-time students who are registered primarily in ne other unit of the university who take a course two at the school of public health. Methods of nting these students also vary.

Then there are other students who may be full e at the school of public health but who are not didates for a degree. They may concentrate all their work in one department and so not fulfill graduation requirements. Sometimes they are included in school enrollment counts and sometimes not.

For some particular programs of study, degrees may not be awarded until field training requirements have been met. Students who are away from the school during the normal academic year may or may not be counted—again depending possibly on the purpose of the count.

Students in Schools of Public Health

The 1953 fall enrollment at the 10 schools of public health totaled 1,119; of this number 771 were graduate students, 227 undergraduates, and 121, special students (table 58).

Dr. Winslow in his report on accreditation gave the enrollment at the same 10 schools for the academic year 1951–52 as 831 graduate and 78 special students—data on undergraduate students were not included.

Table 58.—Enrollments in each of 10 schools of public health, fall of 1953

School	Total	Graduate	Undergraduate	Special
Ten schools	1,119	771	227	121
California	144	63	76	5
Columbia	142	117	--------	25
Harvard	113	[1] 83	--------	30
Johns Hopkins	137	109	--------	[2] 28
Michigan	167	97	65	5
Minnesota	157	[1] 101	53	3
North Carolina	115	80	33	2
Pittsburgh	73	57	--------	16
Tulane	24	20	--------	4
Yale	47	44	--------	3

[1] Graduate students taking degree program; some are tentatively registered as special students.

[2] Includes undetermined number of students who may later be admitted as candidates for MPH degree.

Source: Deans of schools.

The 9 schools of public health in full operation during[11] the academic year 1949–50 had a total of approximately 1,100 students, of which 631, or more than half, were enrolled for graduate degrees; 336 were undergraduate students; and 130 were special students. This count is based on the number of students who furnished data for the 1950 survey of schools of public health and undoubtedly excludes some students such as those taking field training under the direction of a school of public health.

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[11] Exclusive of Pittsburgh which did not admit its first class until the fall of 1950.

In this group of students, nearly 75 percent of the graduate students were men while almost as high a proportion of the undergraduates were women.[13] The special students were almost evenly divided between men and women.

The average age of the graduate students was 34 years, of the undergraduates 28 years, and of the special students 35 years.

The students came from 51 States, Territories, and possessions of the United States and from 39 foreign countries. There were 146 of these nationals of other countries—constituting 13 percent of the total student body at the schools. Only 1 percent of the undergraduates were from countries other than the United States, but 17 percent of the graduate students and 25 percent of the special students were from other countries. Some of these special students later in the academic year would be classified as graduate students, since it is a rather common practice at the schools of public health to admit all foreign nationals as special students and transfer them to the graduate category when they prove their ability to carry on successfully the required classwork.

Of the 146 foreign students, 62 came from Asiatic countries, 37 from Central and South America, 20 from Europe, 13 from Canada, 7 from Africa, 6 from the West Indies, and 1 from New Zealand. The presence of these students creates problems for the schools. The difficulty of teaching technical subjects to students who are handicapped by limited facility in the English language is obvious. But other problems occur also, such as choosing course content that will be valuable for students who will be confronted with problems different from those in this country. The foreign students, on their part, frequently have to adjust to educational methods and living conditions that are strange and perhaps unpleasant to them.

The deans of the schools of public health, however, agreed that in spite of the added problems, they would not want to exclude these students from other countries. This is one concrete contribution the schools can make to the improvement of international health conditions; moreover the curriculums of the schools are enriched by students with different backgrounds and experience.

The large proportion of students receiving financial assistance in addition to tuition is another somewhat unusual feature of the schools of public health. During 1949–50, nearly all of the foreign students ([illegible] percent) and 75 percent of the students from the United States reported that they were receiving aid assistance. For the foreign students, fellowships from international agencies or foreign governments and philanthropic foundations were the most frequently reported sources. For the students from the United States, veterans' benefits and stipends from State or local health departments—full or part salary—were the most frequently reported sources.

Of the graduate students enrolled in the academic year 1949–50, 331 had already received professional degrees, and an additional 9 percent had master's degrees. The 331 students with professional degrees were distributed as follows: 204 in medicine, 65 in nursing, 39 in engineering, 14 in dentistry, and 9 in veterinary science.

The previous experience in health or medical care reported by the 631 graduate students was largely concentrated in work in official health agencies or in the Armed Forces. Only about one-sixth of the group reported no experience in the field of health.

More graduate students majored in public health administration than in any other subject—11[illegible]. Hospital administration was a close second with 10[illegible] graduate major students. Public health education and environmental sanitation were the only other fields with more than 50 graduate majors. Other graduate students were distributed among such major specialties as tropical public health, microbiology, epidemiology, maternal and child health, public health nursing, nutrition, biostatistics, and industrial hygiene.

The 336 undergraduate students in the academic year 1949–50 were enrolled in 4 schools. Slightly more than half of the undergraduates had had some previous experience in providing health and medical services, mainly in the Armed Forces or in hospitals. Nearly two-thirds were majoring in public health nursing, the only undergraduate major offered during 1949–50 in three of the schools that had undergraduate students. The fourth school had no undergraduates in nursing but had undergraduate students majoring in public health laboratory work, in sanitation, and in several other specialties.

Alumni of Schools of Public Health

The geographic distribution and the kinds of positions held by the alumni of the schools of public health illustrate the widespread influence of the[illegible] schools. Complete data are not available, but in the 1950 study made by the Public Health Service information was obtained from 8 of the then accredited schools on a large number of their alumni.[18] These reports included some information on 3,779 persons who had received masters' or doctors' degrees from the schools. Of these, 118 were known to have died. Another 894 alumni were nationals of foreign countries about many of whom current information was not available. The United States alumni presumed to be alive were reported as living in all the States, Territories, and possessions of the United States. Other alumni were on military or foreign duty.

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[13] At the time of this study, most of the undergraduate work given in the schools of public health was in public health nursing.

From the information available on the positions held by these United States alumni it appears that more of them are employed in official governmental agencies—Federal, State or local—than in any other type of employment. The principal positions held by them were:

Position	*Number*	*Percent*
United States alumni with known positions	2,459	100.0
Official health or other public agency	1,434	58.3
Federal	423)	17.2)
State	510)	20.7)
Local	501)	20.4)
University or college teaching or research work	319	13.0
Voluntary health or welfare agency or foundation	191	7.8
Private practice	189	7.7
Hospital administration	85	3.4
Housewife	72	2.9
Business or industry	62	2.5
Retired	34	1.4
All other known positions	73	3.0

Current Problems

The schools of public health are today confronted with many problems such as financing, recruitment, and maintaining an effective balance between teaching, research, and service.

In common with universities in general and other professional schools, schools of public health have encountered difficulties in obtaining sufficient financial support to provide the facilities needed and to maintain the high standards of professional education that are considered essential. Because of the large numbers of special disciplines required in the faculty of a school of public health and because of the number of categories of students who receive training at these schools, professional education in public health is expensive. The recent study made by the Public Health Service showed an average basic operating expense per graduate student of approximately $4,000. This figure varied widely from school to school depending on differences in organization and program, number of full-time faculty, size of student body, and amount of research.

The problem of recruiting professional personnel, particularly physicians, into public health is a major one. Careful analysis of the professional responsibilities of public health personnel will perhaps identify the public health functions that can be effectively assigned to persons without medical training. In this way it may ultimately be possible to assure the essential medical supervision of programs and services by reducing the time spent by physicians in duties that can be adequately performed by nonmedical personnel. Several schools are experimenting with the training of nonmedical public health administrators both at the undergraduate and graduate levels of instruction.

The question of the proper balance between the major functions of the schools—teaching, research, and service—is one that each school must, of course, resolve individually in keeping with its own objectives and traditions. The rapid changes in public health practice necessitate constant revision in the schools' curriculums, emphasize new fields for research, and provide additional opportunities for community service.

How to integrate the content of the many different subjects taught in the schools is a problem faced by all and being met in various ways—core courses, required comprehensive courses, or special seminars. Whether the emphasis of a school's instruction shall be on practical methods in public health to equip the student for his immediate duties or on more theoretical concepts to enable him to meet possible future responsibilities is another difficult problem for the schools and one which will unquestionably be met in different ways by the individual schools.

Conclusions

This brief description of education of professional personnel in public health, while indicating many differences among schools, reveals a common characteristic which sharply differentiates this group of schools from other institutions that provide education for the health professions. Schools of public health bring together many different professions and occupations for education in principles and practice of community health. In contrast other institutions for training health personnel offer education in health diagnosis and treatment of individual patients. Students of public health take identical courses in certain of the basic public health sciences but are separated into special groups for courses that concentrate on the development and application of skills of their individual profession or specialty to the field of public health.

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[18] Schools of public health in the University of California, Harvard University, Johns Hopkins University, the University of Michigan, the University of Minnesota, the University of North Carolina, Tulane University, and Yale University. Alumni are defined as recipients of master's or doctor's degrees.

Professional education in public health is a young field as compared with medicine, dentistry, and nursing. It is, therefore, not surprising to find wide variation among schools in organization, policies, and content of training. Planning programs of professional education in this field requires sound estimates of the effects on the health and implications for health service of advances in almost every field of human knowledge, including the natural and social sciences. To a large extent the effectiveness of public health in the future depends on how well schools of public health can discharge their responsibilities.

List of Schools

The number of students enrolled in the schools of public health are shown in table 58. The names and places of the schools fol[illegible]

California

University of California School of Public Health, Berkeley, Los Angeles, and San Francisco

Connecticut

Yale University School of Medicine, Department of Public Health, New Haven

Louisiana

Tulane University School of Medicine, Department of Tropical Medicine and Public Health, New Orleans

Maryland

The Johns Hopkins University School of Hygiene and Public Health, Baltimore

Massachusetts

The Harvard School of Public Health, Boston

Michigan

University of Michigan School of Public Health, Ann Arbor

Minnesota

University of Minnesota School of Public Health, Minneapolis

New York

Columbia University School of Public Health of the Faculty of Medicine, New York

North Carolina

University of North Carolina School of Public Health, Chapel Hill

Pennsylvania

University of Pittsburgh Graduate School of Public Health, Pittsburgh

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26. Education for Social Work

By ERNEST F. WITTE, KATHERINE A. KENDALL, and ERNEST V. HOLLIS*

SOCIAL WORK as an expression of man's humanity to man has always been with us. Social work as a professional discipline and as a field of professional practice is a product of the 20th century. Professional education for social work is approximately 50 years old. It developed from an apprenticeship training initiated by private philanthropic agencies, which gradually evolved into the present educational program carried on by more than 50 graduate schools of social work in as many universities and colleges in the United States. (The term "graduate" as used in this article refers to education in social work beyond the bachelor's degree.)

The Field of Social Work[1]

Social work has been defined as a "professional service rendered to people for the purpose of assisting them as individuals or in groups to attain satisfying relationships and standards of life in accordance with their particular wishes and capacities and in harmony with those of the community."[2]

The scope and nature of social services have never been precisely defined, and it is doubtful whether they ever can be in a field so dynamic, so diverse, and one which by its nature forms borderline areas with so many others. In the main, social work has been most closely identified with the provision of assistance to families and individuals needing economic help; with care for the emotionally, mentally, and socially maladjusted in society; with help to those needing special protection such as the unmarried mother, the illegitimate child, the orphaned, deserted, or neglected child, the immigrant, and the migrant; and in more recent years with services for those who are personally maladjusted, as in conflicts within the family group, within a social institution such as the public school, or within the community.

The frontiers of social work are fluid, and its methods are being called upon and adopted for use in many new situations. What meaning these new developments will have for the profession is still uncertain.

Number of Persons

Approximately 75,000 persons in 1950 were occupying positions classified as social work, according to a study made by the Bureau of Labor Statistics.[3] If to this total, allowance is made for areas omitted from this study (such as the social insurances) and for the number of unfilled positions, a safe estimate of the number of social work positions at the professional level in the country would be in excess of 100,000.

The demand for social workers has constantly exceeded the supply, and this is not hard to understand in view of the number of professionally qualified graduates as contrasted with the number of social work positions in the country. That there are several thousand unfilled positions in social work is easily established. In June 1953, for example, employers listed 1,593 vacancies they hoped to interview candidates for during the week of the National Conference of Social Work. Only 435 persons registered as being interested in a position. With the exception of a few graduates, those who registered were already employed but were interested in considering other opportunities. Many other known vacancies were not registered.

Professional Organizations

Five major professional organizations in social work have definite standards for admission. The largest of these is the American Association of Social Workers with approximately 14,000 members. The other four are the American Association of Medical Social Workers with 2,400 members, the American

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[1] For a review of the historical development of social work, the reader is referred to Ernest V. Hollis *and* Alice L. Taylor, *Social Work Education in the United States.* New York, Columbia University Press, 1951, p. 53-113.

[2] Clyde E. Murray. "Social Work as a Profession." *Social Work Yearbook, 1954.* New York, American Association of Social Workers, 1954. p. 505-517.

[3] American Association of Social Workers, *Social Workers in 1950* New York, American Association of Social Workers, 1952.

Association of Psychiatric Social Workers with 1,700 members, the American Association of Group Workers with 2,000 members, and the National Association of School Social Workers with 650. Two other professional associations in a formative state but with as yet no required educational base for membership are the Association for the Study of Community Organization and the Social Work Research Group.

The development of one overall professional membership organization is being considered, with provision being made for the specialized groups to carry on professional activities related to their special interests. This plan is being developed by a joint board called the Temporary Inter-Association Council of Social Work Membership Organizations.

Licensure

Social work has given relatively little attention to licensing as a means of professional regulation because more pressing issues have required its time and energy. In recent years, however, the profession has moved toward such a development. California has had for some years a State-administered system of voluntary registration of social workers based upon examinations conducted by a State board. Professional organizations of social workers in a number of other States have had measures introduced in State legislatures to license and regulate the practice of social work. Other groups, including national membership organizations, have the problem under study, but there are still many complicated problems to be worked out before satisfactory legislation can be proposed. The primary problem on which further study is needed is whether individuals should be licensed in the field of social work or whether, since social services are carried out by agencies, it would be preferable to license agencies.

Periodicals

The more important professional social work periodicals include: *The Social Work Journal*, published by the American Association of Social Workers; *Social Casework*, published by the Family Service Association of America; the *Social Service Review*, published by the University of Chicago. Other journals or bulletins are published by the specialized membership associations.

Evolution of Education for Social Work

Social work education had its beginnings in a summer training course for charity workers sponsored by the New York Charity Organization Society in 1898. By 1904, this training course had been transformed into a 1-year educational program of the New York School of Philanthropy, now the New York School of Social Work of Columbia University. In the same period, an Institute of Social Science was established through the efforts of Chicago social workers as a part of the Extension Division of the University of Chicago. The Institute became the independent School of Civics and Philanthropy, which was later incorporated in the University of Chicago as the graduate School of Social Service Administration. In this period similar developments were taking place in Boston, Philadelphia, and St. Louis, and by 1910 there were schools of social work in the five largest cities in the country.

The next two decades brought rapid expansion of educational facilities for social work in the United States and also in Canada. The first World War and a major depression created new demands for social services and new problems for social work education. Rapid growth resulted in uneven development with wide variation in educational methods and standards.

A major problem early emerged in relation to the auspices under which programs of social work training should be conducted. A number of the older and thus better-established schools were not affiliated with institutions of higher learning. The fact that they were sponsored and, to a large extent, supported by private welfare agencies gave them the intensely practical purpose of preparing personnel for specific agency tasks. The resulting strong emphasis on field work induced fears that this important aspect of social work education could not be conducted properly within the academic restrictions imposed by universities.

It was only a matter of time, however, before all schools were prepared to recognize the undeniable benefits to be derived from university standards of scholarship and research. By 1935, the membership association of the schools of social work had ruled that, henceforth, only the schools established within institutions of higher learning on the approved list of the Association of American Universities could become eligible for membership. The New York School of Social Work, the oldest of the schools, was the last to give up its independent status; it affiliated in 1940 with Columbia University.

The academic level of social work education and the duration of the course of study also posed problems in the evolution of the professional schools. In the developmental period there was marked variation the types of programs offered. Some of the older and stronger schools early offered 2 years of professional study based on a bachelor's degree. For the most part, however, social work education was offered in undergraduate programs or in a combination of undergraduate and graduate courses. In 1933, the membership association ruled that no school would be eligible for admission unless it offered at least 1 year of graduate work.

By 1939, the association had established the requirement of 2 years of postbachelor's graduate professional study leading to the master's degree. Until 1952 the association did, however, maintain a membership classification for "1-year schools," which made it possible for schools of social work offering only the first postbachelor's year of professional education to become members. The growing acceptance of the essential unity of the 2-year professional curriculum and the gradual disappearance of "1-year programs" led to the abolition of the 1-year classification in 1952. Since the publication of the Hollis-Taylor report there has been a growing awareness that the two postbachelor's degree years are only the upper half of a 4-year professional program that should begin in the junior year of the undergraduate college.

Coming as it did when depression needs had led to a tremendous expansion of governmental social services, the 1939 requirement that social work education be exclusively postbachelor's appeared to some as restrictive and unrealistic, particularly in the face of urgent demands for social work personnel in the public social services. In protest against this situation, a movement was launched in a small number of land-grant and other universities to gain recognition for combined undergraduate-graduate preparation for social work. The training plan put forward by this group proposed a 5-year curriculum beginning with the freshman year in college and combining general social science preparation with vocational training. The plan provided for a bachelor of arts in social work upon completion of 4 years of study and the master of arts with a major in social work upon completion of the 5-year curriculum.

Very few of the schools in this movement actually provided a graduate year of study in social work, and the training they offered did not find general recognition as approved social work education by employers of social work personnel. Nevertheless, a serious problem was presented by the existence of two dissimilar patterns of social work education, with each leading to a master's degree.

At the present time, the 2-year professional schools and the undergraduate colleges interested in social work education are working harmoniously within the Council on Social Work Education to promote sound programs of professional education for social work.

Educational Associations

By 1919, education for social work had so progressed that the schools sought to accelerate their development by organizing an association for discussion of common problems and exchange of views and experience. This organization became the American Association of Schools of Social Work, which served as the standard-setting and accrediting body for social work education until 1952, when it was merged with other educational and professional organizations in social work to form the Council on Social Work Education.

In its 33 years of existence, the American Association of Schools of Social Work made a significant contribution to the identification and formulation of the objectives, content, and methods of social work education. As a standard-setting body, the Association early saw the need for defining more clearly the educational requirements for admission to membership and thus initiated an accrediting process. Along with its regulatory function, the Association performed a wide variety of informational and advisory services designed to promote and maintain consistently high standards of education for the profession.

In 1942, the schools subscribing to a combined undergraduate-graduate type of social work training had organized themselves as the National Association of Schools of Social Administration. This group also established membership requirements which called for, among others, a well-defined curriculum in one or more of the following fields: social work, employment service, rural welfare, recreation, social insurance, guidance, rehabilitation, personnel work. The Association performed a valuable service in raising the standards of member institutions, but its regulatory function gained little recognition within the social work field.

A coordination and study group known as the National Council on Social Work Education was created in 1946 to find a solution to the problems posed by the presence of two accrediting bodies concerned with social work education. In this organization, the American Association of Schools of

Social Work and the National Association of Schools of Social Administration joined forces with other professional social work organizations to work together in the best educational interests of the field as a whole. With the assistance of a grant from the Carnegie Corporation, the National Council undertook as its major project a comprehensive study of social work education. With the publication of the report in 1951, the conflicts that had led to the organization of the National Council on Social Work Education were resolved, and the three educational organizations—the National Council, the American Association of Schools of Social Work, and the National Association of Schools of Social Administration—were ready to give up their separate identities to become part of one comprehensive organization, the Council on Social Work Education.

The Council on Social Work Education began operations on July 1, 1952. This organization translates into action the belief that social work education is the joint responsibility of institutions of higher education and of the social work profession. Provision is made for representation from the social welfare employing agencies, the professional membership associations, the interested public, and general higher education as well as from undergraduate colleges and the graduate-professional schools of social work.

The activities of the Council are carried on through a council of delegates, a board of directors, four standing commissions, numerous committees, and a professional staff. The program already instituted and projected for the future will make possible the many benefits that come from constant interchange of opinion and experience, from research, accreditation, consultation service, recruitment campaigns, development of educational standards, preparation of teaching materials, annual program meetings, conferences on special subjects, and committee work on many aspects of educational endeavor. In a word, these are among the activities that characterize the efforts of a young profession to build and maintain a solid educational foundation for its professional practice.

Studies

A study of social work education of somewhat limited scope was undertaken by the American Association of Schools of Social Work in 1942. The report was published under the title *Education for the Public Social Services* (by the University of North Carolina Press). The onset of World War II, among other things, prevented full discussion a consideration of the recommendations of the repo

The formation of the Council on Social Wo Education was a major outgrowth of the repo *Social Work Education in the United States*, produc under the joint authorship of Ernest V. Hollis of t United States Office of Education and Miss Alice Taylor, a social work practitioner and educator.

Among the major conclusions of the study, t following are selected as illustrative: Social wo education is seen as the responsibility of the to profession, with the undergraduate college, t graduate professional school, and the field of practi each carrying distinctive but interrelated education functions. The report takes the position that tru professional education must be graduate educatio but asserts that education for professional responsibility as a social worker consists of an orderly progression from the final 2 years of undergraduate wor through 2 years of graduate study. It emphasiz the necessity for' cooperation between the undergraduate college and the social work profession i developing the undergraduate foundation program. The report recognizes that a systematic study o social work theory and practice is needed to disco which of the positions generally described as soci work are professional, semiprofessional, or other tha professional. In the absence of such a study, th authors predict that the profession will continue t have difficulty in determining the character, amoun and distribution of the educational facilities it need

The publication of this report has afforded a opportunity for profession-wide discussion of bas issues in social work education and an incentive fo further study and definition of the goals and conte of educational programs. To bring the essenti ideas in the report before a wider audience, th American Association of Social Workers has prepared an abridged version.

Accreditation

Social work education has used a process of accreditation since 1927, when the American Association of Schools of Social Work established requirements for membership. Formal accrediting procedures were not initiated, however, until 1932. I the same period, the American Association of Medical Social Workers and the American Association o Psychiatric Social Workers engaged in accrediti activities in relation to their particular specializatio By 1951, the accrediting functions of these professional membership associations as well as the Ame can Association of Group Workers and the National Association of School Social Workers had been assumed by the American Association of Schools of Social Work, which brought under one organization responsibility not only for the accrediting of general programs of professional social work education but also for the approval of specializations.

While these developments were taking place in professional education, the National Association of Schools of Social Administration initiated its movement to accredit a combination of undergraduate and graduate training for social work. With the establishment of the Council on Social Work Education, agreement was reached that for the time being only graduate-professional schools would be accredited. The bylaws of the Council place this function in a semi-autonomous Commission on Accreditation, which carries responsibility for the formulation of accrediting standards and procedures and the evaluation and approval of graduate programs of social work education.

An important present concern of the Council on Social Work Education and its Commission on Accreditation is the relationship that should obtain between the accrediting process in social work and institution-wide accrediting conducted under the auspices of regional accrediting associations. The Commission has established cooperative relationships with the six regional associations with a view to participating in a nationally correlated accrediting program. It is expected that all agreements reached with the associations will recognize the responsibility of the Council on Social Work Education through its Commission on Accreditation for the continued formulation of standards for social work education, for participation in the evaluation of any university offering graduate education for social work, and for the maintenance of a list of accredited graduate professional schools of social work.

As of 1953, there were 59 schools of social work in the United States and Canada accredited to provide graduate professional education for social work. Of the 59 schools 3 are approved to offer only the first year of professional education, 25 are approved to offer the specialization in group work, 26 in medical social work, 37 in psychiatric social work, and 10 in school social work. Schools of social work are being established by several additional universities.

Enrollments

Schools of social work have been in existence since the early 1900's, but comparable data on student enrollments and the number of degrees awarded are available for only a relatively brief time.

The total number of students entering schools of social work has never been large. This is due, in part, to the youth of the profession and, in part, to the curriculum requirement that all students receive field instruction in social agencies which meet prescribed standards. The number of suitable field placements available to the schools thus determines student capacity.

Table 59 shows total, full-time, and part-time student enrollment of the graduate-professional schools in the United States and Canada for the period 1932–53. Statistics have been reported annually over a much longer time, but figures for earlier years are not comparable due to changes in the reporting system. The table reveals a general upward trend in enrollments for the 21-year period. In the United States, for example, there was an increase of from 24 to 52 schools and an increase of total enrollment of from 1,588 to 5,566 students.

A downward trend in enrollment became apparent, however, in 1951 and continued in 1952 and 1953. Social work, like all other professions, has been affected by the decline in the number of students eligible for veterans' educational benefits, the impact of selective service, and the falling off in the birthrate during the depression years. The Council on Social Work Education has launched a vigorous recruitment campaign to reverse the downward trend in enrollments.

Admission Standards

The demands of social work practice require that schools of social work exercise great care in the selection and admission of potential practitioners in the field. Since the ability to work constructively and purposefully with others in a helping relationship underlies all social work activity, the selection of students for the profession is measured in terms of personality as well as intellectual endowment.

Academic requirements for admission include completion of undergraduate work at a sufficiently high level of performance to indicate intellectual capacity for graduate study and an educational foundation in the social sciences. The personality characteristics that promise well for a career in social work are described by the various schools in different ways. In essence, however, the schools appear to be looking for the personal qualities that make for a warm, sensitive, human approach to

Table 59.—Enrollment in the professional curriculum of schools of social work in the United States and Canada, 1932–53

Calendar year [a]	United States				Canada			
	Number of schools reporting	Total	Full-time	Part-time [b]	Number of schools reporting	Total	Full-time	Part-ti
1932	24	1,588	948	640	--------	--------	--------	----
1933	25	1,990	1,018	972	--------	--------	--------	----
1934	29	3,740	1,937	1,803	--------	--------	--------	----
1935	31	3,681	1,837	1,844	--------	--------	--------	----
1936	33	3,848	1,885	1,963	--------	--------	--------	----
1937	32	3,927	1,980	1,947	--------	--------	--------	----
1938	35	4,304	2,150	2,154	--------	--------	--------	----
1939	34	4,416	2,321	2,095	2	97	86	
1940	38	4,711	2,534	2,177	2	93	86	
1941	36	4,353	2,421	1,932	2	71	55	
1942	40	3,699	2,107	1,592	2	64	57	
1943	41	3,835	1,972	1,863	2	60	56	
1944	42	4,364	2,283	2,081	2	78	63	
1945	43	4,656	2,603	2,053	3	210	138	
1946	44	5,637	3,410	2,227	3	293	220	
1947	44	6,156	3,737	2,419	3	368	289	
1948	46	5,703	3,716	1,987	3	460	335	
1949	48	6,257	4,066	2,191	4	545	387	
1950	49	6,366	4,336	2,030	4	578	383	
1951	51	5,953	4,195	1,758	5	476	357	
1952	53	5,919	4,006	1,91[illegible]	7	515	395	
1953	52	5,566	3,694	1,87[illegible]	7	582	371	

[a] The student count is taken on November 1 of each year.

[b] This does not include students taking extension courses or part-time students who are not specializing in social work.

Source: Compiled from annual statistical reports on file with the Council on Social Work Education. The table records enrollment as accurately as possible the limitations of the data available for the years prior to 1938, and every effort has been made to insure comparability through the 20-year period.

people in trouble and a potential ability to be genuinely and constructively helpful to them.

A concerted effort has been made within recent years by the American Association of Schools of Social Work and its successor organization, the Council on Social Work Education, to help the schools in the identification and assessment of these personal qualities. Two conferences were held for this purpose in 1953 with financial support from the Field Foundation and the New York Foundation.

Professional Curriculum and Degrees

Like all the professions, social work is both an art and a science. The purpose of the social work curriculum is to produce social workers who act on the basis of scientific knowledge about society and human behavior and who use acquired skills in the art of practice. This purpose is achieved through a 2-year graduate program of classroom and field instruction and research, leading to the master's degree.

A curriculum policy statement adopted by the membership of the American Association of Schools of Social Work in 1952 indicates that the social work curriculum should provide "knowledge and understanding of the social services, their devel ment, and their relation to the social order, to so change, and to community needs; knowledge understanding of human behavior, needs and aspi tions; and knowledge and understanding of so work practice." The essential unity of the 2-y curriculum is emphasized, with the first year p viding for acquisition of knowledge and skill in stated learning areas and the second year provid for extension of knowledge and the further devel ment of skill in the same learning areas.

This policy statement marks a departure curriculum development in social work educati It is undeniably directed toward a broadly c ceived 2-year program designed to produce so workers who see social work practice as a whole, possess a common core of professional knowle and skill, and who bring a broad perspective to social and human problems with which social w is concerned. The role of specialization in suc program poses difficult problems that have yet be solved.

Table 60 indicates that both in the United St and in Canada a number of schools grant an award upon completion of the first year of the graduate professional program in social work. With the gradual disappearance of 1-year schools and a growing emphasis upon the 2-year master's degree as a necessary qualification for professional practice, these awards (a certificate in the United States and a professional bachelor's degree in Canada) are of decreasing significance. It is not surprising, therefore, that the number of students receiving 1-year awards has fallen off in recent years. This trend is likely to continue.

Table 60.— Awards granted to men and women completing a 1-year program in schools of social work in the United States and Canada, 1944–53

Academic year	United States[a]			Canada[b]		
	Total	Men	Women	Total	Men	Women
1944–45	178	13	165	27	2	25
1945–46	202	29	173	72	10	62
1946–47	192	45	147	140	37	103
1947–48	227	70	157	189	63	126
1948–49	244	89	155	243	93	150
1949–50	346	142	204	248	100	148
1950–51	338	185	153	214	79	135
1951–52	287	145	142	208	84	124
1952–53	237	108	129	175	44	131

[a] In the United States, the award usually conferred upon completion of 1 year of the 2-year professional curriculum is a certificate.

[b] In Canada, the usual award is the degree of bachelor of social work.

Source: Annual statistical reports on file with the Council on Social Work Education.

Table 61 shows a steady increase in the number of men and women who have completed the full professional program leading to the master's degree and reflects the growing acceptance of the essential unity of the 2-year social-work curriculum. At the beginning of the period most of those degrees were master of science or master of arts with the designation "in social work," but by the close of the period most of the schools were using a professional master's degree, master of social work (M. S. W.).

Table 61.—Awards granted to men and women completing a 2-year program [a] in schools of social work in the United States and Canada, 1944–53

Academic year	United States			Canada		
	Total	Men	Women	Total	Men	Women
1944–45	839	43	796	31	1	30
1945–46	1,049	147	902	28	2	26
1946–47	1,311	306	1,005	37	10	27
1947–48	1,765	496	1,269	77	25	52
1948–49	1,803	501	1,302	48	19	29
1949–50	1,804	517	1,287	53	26	27
1950–51	1,923	744	1,179	85	25	60
1951–52	1,946	786	1,160	103	42	61
1952–53	1,844	771	1,073	100	43	57

[a] The accepted qualification for completion of the 2-year program is now the master's degree, usually the professional degree of master of social work (M. S. W.). Certificates or diplomas have, however, been awarded by some schools in the period covered by the table.

Source: Compiled from annual statistical reports on file with the Council on Social Work Education.

Post-Masters Program

A notable development of recent years is the extension of social work education beyond the master's degree program. For many years, doctoral education in social work was centered in one or two schools; by 1953, 13 schools[4] in the United States and Canada were offering advanced programs leading to a third-year certificate or doctoral degree. The degree awarded may be the traditional doctor of philosophy or the recently established professional degree of doctor of social work (D. S. W.). From 1931 through 1953, 14 schools had conferred 109 doctor's degrees in addition to a third-year certificate awarded to 81 persons. (See table 62.)

The purpose of these programs is to educate persons who will provide leadership for tomorrow's professional practice and a high level of competence in administration, supervision, teaching, and research. While many problems remain to be solved before the high expectations of these advanced programs can be fully realized, the development of post-master's programs in schools of social work sufficiently rich in faculty and other resources to support them indicates the growing maturity of the social work profession.

Preprofessional Education

Social work shares with many other professions the problem of defining the educational base upon which the professional discipline should rest. The profession has accepted the principle, enunciated in the Hollis-Taylor study, that education for professional responsibility as a social worker consists of an orderly progression from the final 2 years of undergraduate work through 2 years of graduate study. But that principle has not yet eventuated as practice. The

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[4] The following schools awarded doctoral degrees in social work in the academic year 1952-53 (the figures indicate the number of doctoral degrees): Bryn Mawr College, 1; Catholic University of America, 1; University of Chicago, 3; University of Minnesota, 1; University of Pennsylvania, 1; University of Pittsburgh, 1. Institutions granting awards, other than the doctoral degree, for completion of work beyond the 2-year program, together with the number of awards in 1952-53, were: University of Pennsylvania, 4; University of Pittsburgh, 2; Smith College, 9; Western Reserve University, 2. During the year 7 other institutions enrolled students beyond the second-year status.

Table 62.—Students receiving awards upon completion of post-master's programs in schools of social work in the United States 1931–53

Academic year	Number of schools represented	Awards		
		Total	Third year award [a]	Doctorate [b]
Total	14	190	81	109
1931–32	3	5	0	5
1932–33	2	3	0	3
1933–34	4	4	0	4
1934–35	3	5	0	5
1935–36	2	2	0	2
1936–37	2	8	0	8
1937–38	3	6	0	6
1938–39	2	3	0	3
1939–40	3	11	5	6
1940–41	4	7	1	6
1941–42	6	14	4	10
1942–43	3	8	4	4
1943–44	0	0	0	0
1944–45	4	4	0	4
1945–46	4	4	1	3
1946–47	2	2	0	2
1947–48	5	10	5	5
1948–49	5	12	6	6
1949–50	4	14	11	3
1950–51	6	22	14	8
1951–52	9	21	13	8
1952–53	8	25	17	8

[a] The award granted upon completion of one year of advanced study beyond the master's degree is a special certificate or diploma.

[b] The degree awarded may be a Ph. D or D. S. W. (doctor of social work and, in one school, doctor of social welfare).

Source: Annual statistical reports on file with the Council on Social Work Education.

Council on Social Work Education with its membership of graduate schools and undergraduate departments will presumably determine the educational experiences in the undergraduate years that constitute necessary preparation for graduate-professional study. Meanwhile, the graduate schools operate on the assumption, set forth in the 1952 curriculum policy statement, that the advanced social work student should bring to professional study a broad liberal arts background which includes some concentration in the social and biological sciences.

At the present time, undergraduate departments of 65 colleges and universities hold membership in the Council on Social Work Education, and it is believed that many others will seek membership as the program of the Council becomes better known. The partnership of graduate schools and undergraduate departments within the Council promises productive activity on the formulation of appropriate educational programs on both academic levels and fruitful effort in bringing professional and preprofessional education into effective relationship.

Current Educational Problems

That social work has many unresolved educative problems was made clear in the Hollis-Taylor study, and there is no universal agreement on their relative importance. Certainly among the problems[8] which the field must face are these:

1. Delineating the field of social work practice so that professional education can sharpen and clarify its focus.
2. Determining what part, if any, of social work education can be undertaken at the undergraduate level and how to relate this to graduate professional education.
3. Insuring a better distribution of social work educational facilities. Corollary to this is a wider and more flexible use of field work facilities.
4. Modernizing the educational curriculum to (*a*) introduce more current knowledge from the social and behavioral sciences, (*b*) integrate the field without destroying the specialized knowledge needed by practitioners in specialized settings, (*c*) bring about a greater sense of professional and social responsibility of students, and (*d*) achieve a more effective use of field work.
5. Determining the place of research in the curriculum and methods for achieving this.
6. Improving the supply of qualified faculty.
7. Extending professional education to the thousands now working in the field who have never had it and who for years to come will be providing the great proportion of the social services, particularly in the public welfare field.
8. Improving the process of student selection.
9. Developing better teaching materials. Particular emphasis needs to be placed upon the development of general concepts and principles so that the student will have a basis for generalization.

There are a number of problems which are not educational as such but which have a marked influence upon professional education. One of these is the need to get more young people to select social work as a career. There is some doubt whether the number of social work graduates each year is large enough to replace the professionally qualified workers who retire each year. Under these circumstances there is almost no opportunity to increase substantially the proportion of professionally educated social workers to the total in the field or to supply professionally qualified personnel for new services.

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[8] An elaboration of some of these problems is found in American Association of Schools of Social Work, *Towards an Integrated Program of Professional Education for Social Work*. New York, The Association, 1952.

A second and closely related problem is that of adequate financing of social work education, including adequate student aid. This financial problem, although not peculiar to social work education, has unusual significance because social workers are directly responsible for supervising the spending of billions of dollars each year. The public is concerned that these funds shall be used as efficiently as possible.

The third problem is to relate social work practice more closely to the administrators of the agencies in which the programs are carried on. Unless professional education can develop the leaders who are ultimately charged with administering public social work programs, professional practice will never have a satisfactory opportunity to develop its full potentials. This is a complicated problem related to many factors besides professional education, but social work has not yet grappled with the problem to the extent it ultimately must.

Although placed last in this listing of problems, the need for the field to interpret more effectively what it is, what it does, and what its objectives are is certainly not last in importance. To a large proportion of the public, social work is still synonymous with relief giving. There has been no coordinated long-term attempt to make the field known to the public. Until this is done, the public will have no clear conception of the functions of the social worker, but will continue to think of isolated functions or particular agencies.

Accredited Schools of Social Work

The schools of social work maintained by the following colleges and universities have been approved by the Commission on Accreditation of the Council on Social Work Education. The figures indicate the enrollment in social work courses in the fall of 1953.

United States

CALIFORNIA

University of California, 159
University of California, Los Angeles, 56
University of Southern California, 148

COLORADO

University of Denver, 103

CONNECTICUT

University of Connecticut, 114

DISTRICT OF COLUMBIA

Catholic University of America, 162
Howard University, 106

FLORIDA

Florida State University, 35

GEORGIA

Atlanta University, 60

HAWAII

University of Hawaii, 48

ILLINOIS

Loyola University, 123
University of Chicago, 174
University of Illinois, 42

INDIANA

Indiana University, 102

IOWA

State University of Iowa, 33

KANSAS

University of Kansas, 52

KENTUCKY

University of Louisville, 68

LOUISIANA

Louisiana State University, 66
Tulane University, 136

MASSACHUSETTS

Boston College, 116
Boston University, 268
Simmons College, 100
Smith College, 137

MICHIGAN

Michigan State College, 26
University of Michigan, 190
Wayne University, 92

MINNESOTA

University of Minnesota, 91

MISSOURI

University of Missouri, 15
Saint Louis University, 75
Washington University, 135

NEBRASKA

University of Nebraska, 22

NEW YORK

Adelphi College, 57
University of Buffalo, 201
Fordham University, 201
Columbia University, 706

NORTH CAROLINA

University of North Carolina, 54

OHIO

Ohio State University, 88
Western Reserve University, 168

OKLAHOMA

University of Oklahoma, 30

PENNSYLVANIA

Bryn Mawr College, 45
University of Pennsylvania, 131
University of Pittsburgh, 113

PUERTO RICO
University of Puerto Rico, 88

SOUTH CAROLINA
University of South Carolina, 33

TENNESSEE
University of Tennessee, 117

TEXAS
Our Lady of the Lake College, 38
University of Texas, 43

UTAH
University of Utah, 60

VIRGINIA
College of William and Mary, 57

WASHINGTON
University of Washington, [illegible]

WEST VIRGINIA
West Virginia University, 25

WISCONSIN
University of Wisconsin, 173

Total, United States
In courses leading to first professional degrees.......... 5,497
In courses leading to advanced degrees.............. 69
Total.. 5,566

Canada

BRITISH COLUMBIA
University of British Columbia, 134

MANITOBA
University of Manitoba, 43

ONTARIO
University of Toronto, 177
University of Ottawa, 30

QUEBEC
Laval University, 45
McGill University, 99
University of Montreal, 54

Total, Canada
In courses leading to first professional degrees.......... [illegible]
In courses leading to advanced degrees.............. [illegible]
Total.. [illegible]

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27. Teacher Education

By W. EARL ARMSTRONG[*]

THE TEACHING PROFESSION and the schools in which its members work constitute a ajor means by which society tries to maintain and prove itself. Teachers help to initiate youth into e ways of civilization and at the same time provide r a flexibility which encourages progress. In the alm of education, the teachers, especially the ele- entary- and secondary-school teachers, lay the oundwork for all other professions. The future of l of the professions is dependent therefore upon e improvement of the profession of teaching in the ementary and secondary schools.

e Teaching Profession

During the school year 1949–50, a total of 1,045,225 sons were teaching in the public and private ele- entary and secondary schools. The number has creased by approximately 35,000 annually since at time and is expected to continue to increase at out the same rate until at least 1960, when it may vel off at about 1,400,000. If the present rate of rnover and the increase in number of positions con- ue, the schools will need about 140,000 new teach- s each year for the foreseeable future. Present d predicted college enrollments indicate that ap- oximately 100,000 new teachers can be expected om the colleges each year for the next decade. Un- s many former teachers return to the profession, e difference between the supply of well-qualified achers and the demand will have to be made up n persons with substandard qualifications.

The ratio of men to women teachers at the ele- ntary and secondary levels is about 1 to 4. (See ble 63.) The proportion of men is greater at the ondary than at the elementary level. Elementary- ool teachers continue to be lowest in college eparation, with approximately 65 percent of them lding bachelor's or higher degrees. Secondary- ool teachers are nearly all (96 percent) college graduates. A considerable number of secondary-school teachers and some elementary-school teachers hold master's degrees.

Table 63.—Number of public elementary and secondary school teachers for specified years, by sex

School year	Elementary[1]			Secondary[2]		
	Total	Men	Women	Total	Men	Women
1899–1900	402, 690	116, 416	286, 274	20, 372	10, 172	10, 200
1909–10	481, 543	91, 591	389, 952	41, 667	18, 890	22, 777
1919–20	586, 268	63, 024	523, 244	102, 675	32, 386	70, 289
1929–30	640, 957	67, 239	573, 718	213, 306	74, 532	138, 774
1939–40	575, 200	67, 140	508, 060	300, 277	126, 837	173, 440
1941–42	558, 828	59, 567	499, 261	300, 060	123, 627	176, 433
1943–44	538, 936	31, 890	507, 046	289, 054	94, 782	194, 272
1945–46	541, 528	34, 916	506, 612	289, 498	103, 293	186, 205
1947–48	554, 939	39, 655	515, 284	305, 739	122, 258	183, 481
1949–50	589, 578	52, 925	536, 653	324, 093	142, 043	182, 050

[1] Elementary schools may include grades K–6, K–7, or K–8.

[2] Secondary schools may include grades 7–12, 8–12, or 9–12.

Source: *Biennial Survey of Education in the United States*, Chapter 1, Statistical Summary of Education, 1937–38, 1941–42, 1945–46, and 1949–50.

Adjustments of salaries for teachers at all levels fell behind the increase in cost of living from 1939 to 1947. Since that time, however, the increases in teachers' salaries have generally been greater than increases in cost of living. For the 9-month school year 1953–54 the salaries of beginning elementary- and secondary-school teachers ranged from $2,200 to $2,600 a year, while salaries of teachers with 10 or more years of experience ranged from $4,000 to $6,000. The general average salary for all teachers was approximately $3,400 a year. The low figure was due to the large number of teachers with little experience or with substandard preparation. School supervisors and administrators, most of whom have masters' degrees or education beyond, received much higher salaries.

Every State now makes some provision for teacher retirement. The amounts range from small sums to more than $3,000 a year in some States for teachers with long periods of service. In 6 States, teachers are covered by State retirement plans and social security, and several other States are considering the adoption of such plans.

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Professional Organizations and Periodicals

The teaching profession is highly organized in numerous associations. Some organizations, such as the National Association of Classrooom Teachers and the Association for Supervision and Curriculum Development, cut across grade lines; and others deal with the subject fields in which teachers work, such as English, social studies, science, and mathematics. These organizations concern themselves almost exclusively with professional matters. Two—the National Education Association and the American Federation of Teachers—deal with both the welfare and the professional interest of teachers. The National Education Association has a membership of 520,000 and the American Federation of Teachers approximately 50,000. Both of these organizations have State and local chapters. There are no specific professional qualifications for membership in either of them as yet.

Publications dealing in whole or in part with education number into the hundreds. Almost every subject specialty group, many of the leadership groups, and almost all of the institutional associations issue publications either periodically or in the form of yearbooks. The major publications include: *Review of Educational Research*, published by the American Educational Research Association; *Educational Leadership*, published by the Association for Supervision and Curriculum Development of the National Education Association; *Bulletins* of the Association of Elementary School Principals and the Association of Secondary School Principals of the National Education Association; *Reports of Annual Conferences* of the National Commission on Teacher Education and Professional Standards of the National Education Association; and *Yearbooks* by the American Association of Colleges for Teacher Education, the American Association of School Administrators, and the National Society for the Study of Education. The major publication, however, for elementary- and secondary-school teachers is the National Education Association *Journal*.

The Office of Education of the U. S. Department of Health, Education, and Welfare issues a periodical, *School Life*, which is addressed to school administrators and teachers.

Teacher Certification Requirements

Each of the 48 States determines its own requirements for teacher certification. While the differences among the States are still wide, the gap is rapidly closing. For example, since 1951, 8 States have raised their requirements for the certification of elementary-school teachers to 4 years of approved college preparation, which increases the total number of States with that requirement to 25. Five additional States have established deadlines when degree requirements for elementary-school teachers must be met, and 12 more have moved in that direction since 1951. For secondary-school teachers, all except 4 States now require a minimum of 4 years of college preparation, and 5, including the District of Columbia, require 5 years of preservice preparation.

All States now require every person in an educational position in the public schools to hold a certificate authorizing him to perform that particular service. Only four States require teachers in private and parochial schools to hold certificates, but most of the States refuse to accredit these schools unless the teachers are properly certificated. In practically all of the States, certificates are issued on the basis of transcripts of credit and recommendations from approved colleges and universities. The States rely heavily upon the accreditation status of out-of-State institutions as evidence of the quality of their programs. Certification by examination is virtually a practice of the past.

In addition to the strictly professional requirements, each State has personal standards: 25 States require a health certificate; 29 require United States citizenship or at least filing of the first papers; and [illegible] require an oath of allegiance.

Development of Provisions for Teacher Education

Prior to 1839, no special attention was given by colleges and universities to the education of teachers. Although many college graduates became teachers they did so with no specific preparation at the college level. The date of 1839 is significant because in that year the first State normal school was established in the United States. This school, at Lexington, Mass., was not in the modern sense an institution of higher education. Those who attended it were not required to be high-school graduates, and the subjects which they studied were not of colleg level. The purpose of this and all other State normal schools prior to 1900 was to prepare teachers for the elementary schools. It was not until about that date that normal schools began to require high-school graduation for admission, to offer 2 years of what could be regarded as college work, and to consider the expansion of their curriculums to include the preparation of secondary-school teachers. In the strictest sense, therefore, 1900 may be regarded as the approximate date when any institutions of higher education first gave full attention to the education of teachers.

Very few secondary-school teachers were prepared by these institutions before 1920, when many of them became degree-granting teachers colleges. Since then most of them have prepared as many secondary as elementary teachers. Within the last 30 years more than one-third of the teachers colleges have become general colleges, retaining their major interest in teacher education, but also offering general degrees in liberal education and preprofessional preparation for law, medicine, social work, and the like. At present approximately 125 State teachers colleges and 75 State colleges emphasize teacher education in their offerings. All of them are fully authorized by their respective State departments of education to prepare teachers.

While the normal schools were the first institutions to give specific attention to the preparation of elementary-school teachers, the universities were the first to give specific attention to the preparation of secondary-school teachers. History is not in complete agreement on the first university to offer work in pedagogy. It is clear that the State universities of Michigan, Iowa, and Wisconsin established professorships of education between 1873 and 1881. By 1892, more than 30 universities had established chairs of education, then often called didactics.

Undergraduate Programs and Degrees

The differences in institutional origin of programs for the preparation of elementary- and secondary-school teachers account for many of the present differences in the preparation of teachers for these two levels of work. The normal schools were established specifically to prepare elementary-school teachers. Because all who enrolled in them expected to be teachers, the curriculum was centered on what a person should know to be able to teach in the common schools. The courses offered by the Normal School of Rhode Island about 1890 will illustrate the offerings of normal schools during that period. This school required its students to study composition and grammar, Latin, rhetoric, English literature, arithmetic, algebra, geometry, geography, physical geography, physiology and hygiene, mineralogy, geology, botany, physics, zoology, chemistry, logic, ethics, drawing, general history, reading, pedagogy, psychology, primary methods, methods in grammar, and methods in geography.

While this program may not have been typical as to detail, it was representative of the principles generally followed by normal schools at that time. In setting up their curriculums, they tried to do three things: (1) Equip the prospective teacher with the subject matter that would be used in teaching children (arithmetic, drawing, grammar, and geography); (2) give the teacher some knowledge and skills that would be used in teaching (psychology, pedagogy); and (3) provide a reservoir of information that would be drawn upon in teaching and broaden the cultural outlook of the individual.

Liberal arts colleges and universities approached the preparation of secondary-school teachers from quite a different point of view. In the first place, they were not established specifically to prepare secondary-school teachers. They were already going concerns for other purposes when a sprinkling of scholars and professional educators began to be impressed by the lack of efficiency of college graduates who obtained employment as teachers. These institutions, therefore, were not ready to plan a completely new course of study for secondary-school teachers, as the normal schools had done for elementary-school teachers. Instead they arranged for those who were interested in teaching to pursue their usual major and minor subject-matter programs just as if they were going to take regular liberal arts degrees with the exception that during the junior, senior, or graduate year they were permitted to take some courses in education.

It was not until after 1905 that the idea of organizing a school of education within a university for the purpose of planning and administering programs for the preparation of secondary-school teachers found support worthy of note. Most of the education courses offered in universities before that date were of two types: (1) Courses of a factual or highly theoretical nature such as history of education and philosophy of education and occasionally psychology; and (2) courses in specific methods of the subject to be taught such as teaching science, teaching English, teaching mathematics, and teaching languages.

To some extent these differences in the curriculums for the preparation of elementary- and secondary-school teachers have persisted. Typically, the curriculums for those preparing to teach at the two levels differ in two important respects even today. First, they differ in the proportion of the total curriculum that is devoted to courses in the field of education. Whereas the elementary-school teacher will spend roughly one-fourth of the 4-year period in learning about children, the place of the school in the community, and materials of instruction, the secondary-school teacher will give less than one-fifth of the time to these considerations. Second, they differ in the amount of work in any one subject matter field. The curriculum for the preparation of a secondary-school teacher usually includes a major in a single subject or a group of related subjects. This major or area of concentration, as it is sometimes called, occupies from one-third to one-fourth of the total 4-year curriculum of the student. Elementary-school teachers seldom include a subject-matter major in their program of preparation. Instead, they take some work in each of several fields of subject matter. Both groups generally devote from one-third to one-half of their 4-year programs to the study of courses that are usually called general or liberal education.

These wide differences in the amount and kind of subject matter and professional education courses taken by prospective elementary- and secondary-school teachers may be justified in part by the differences in the functions to be performed by teachers at these two levels. Many leaders in the profession are beginning to question, however, whether the cause of education can best be served with the differences prevailing in the preparation of elementary- and secondary-school teachers. Such questions, coupled with the fact that most persons now preparing to become elementary-school teachers take 4 years of college work, have led to some fundamental changes in the curriculums for the preparation of teachers at both levels. In one State all the institutions that prepare teachers are offering a "single curriculum" for all persons preparing to teach, regardless of the grade level or subject field in which the person will later work. Both groups take the same courses in general education, the same general courses in professional education, and in general the same amount, if not the same kind, of subject matter in their majors.

A few institutions in other States are reducing the difference in the preparation of elementary- and secondary-school teachers. The trend in thinking which is gradually finding expression in practice, is that from two-thirds to three-fourths of the subject matter and technical preparation of teachers should be the same for those preparing to teach at the elementary- and secondary-school levels. In such programs only one-third to one-fourth of the 4-year curriculums are different for the two levels. As more common elements emerge in the two curriculums the tendency increases to have the two groups move along together until near the beginning of the senior year. That is, they take the same courses in general education, the same amount of concentration, and the same courses in professional education through the first 3 years of their 4-year program.

The trends in the preparation of elementary- and secondary-school teachers are found in all colleges and universities where teachers are being prepared. The curriculums for the preparation of elementary-school teachers by a teachers college, for example, are likely to be similar to those for the preparation of elementary-school teachers by a university or a liberal arts college. The same applies to the preparation of secondary-school teachers. In other words, what began as differences characterized by conflicting philosophies held by the various types of institutions in which teachers for the two levels were prepared have now largely become differences in curriculums for the two levels regardless of the type of institutions in which they are prepared.

In brief, the program in teacher education developed in the teachers colleges, the general colleges, and the universities represents a merging of what the universities, the liberal arts colleges, and the teachers colleges stood for at the beginning of the 20th century. The differences in programs offered in the various types of institutions are still noticeable, but they are not nearly so sharp as they were at the turn of the century.

A goodly number of, but by no means all, those who prepare to teach, receive degrees in education. (See table 64.) A sizable proportion of college students who expect to become high-school teachers take majors in subject-matter fields such as English, history, chemistry, and physics.

Forces Contributing to Changes in Teacher Education

Changes in the education of teachers have been produced by a large number of forces. The various associations of colleges and universities in which teachers are prepared have through their meetings

Table 64.—Earned degrees conferred in education, 1947–48 through 1952–53*

Year	Bachelor's degrees	Master's degrees	Doctor's degrees
1947–48:			
Men	12,971	7,597	433
Women	23,414	5,501	88
Total	36,385	13,098	521
1948–49:			
Men	21,351	8,762	586
Women	26,851	6,503	138
Total	48,202	15,265	724
1949–50:			
Men	31,490	12,025	797
Women	30,235	8,044	156
Total	61,725	20,069	953
1950–51:			
Men	29,870	14,772	868
Women	35,168	9,516	170
Total	65,038	24,288	1,038
1951–52:			
Men	24,599	15,194	954
Women	38,352	11,188	192
Total	62,951	26,382	1,146
1952–53:			
Men	21,026	15,168	1,111
Women	40,494	11,659	246
Total	61,520	26,827	1,357

*Includes degrees in industrial arts and physical education.

Source: Annual reports of the Office of Education on earned degrees.

research, and publications been instrumental in effecting changes in the education of teachers. The associations of teachers, supervisors, and administrators have also stimulated institutions to make certain changes.

In addition to these constant influences for change, periodic studies and campaigns have constituted landmarks in the education of teachers. The first of these was a National Survey of Teacher Education, which was done under the auspices of the Office of Education between 1931 and 1933. The facts disclosed by this survey constituted the basic data in this field for at least a decade.

The second of these major efforts to improve teacher education was made by the American Council on Education through its Commission on Teacher Education from 1938 to 1943. This commission attempted to implement the most dependable findings of research in teacher education in the programs of a selected group of institutions and school systems. Results of this study were published in six volumes by the American Council on Education between 1943 and 1946. Developments within the last decade have been greatly influenced by the people who participated in this study and the publications which grew out of it.

Then, in 1947, the National Education Association created the National Commission on Teacher Education and Professional Standards, which has stimulated changes, especially in teacher certification and the inservice education of teachers.

Colleges and Universities Preparing Teachers

As indicated in a preceding section, only about 125 of the 1,200 colleges and universities that prepare teachers are teachers colleges, and only 75 additional institutions list teacher education as their major purpose. The others—approximately 1,000—are general or liberal arts colleges, junior colleges, and universities. Teachers are prepared by junior colleges only in those States that require not more than 2 years of college preparation, which is the minimum standard for the preparation of elementary-school teachers in 16 States. Table 65 shows the number and percentage of teachers for the elementary and secondary schools prepared in the various types of institutions in 1949–50.

One significant fact, not shown specifically by the table, is that at least one-half of all new teachers are now being prepared by multipurpose institutions such as universities (State, municipal, and private) and land-grant colleges. Somewhat more than one-fourth are prepared in liberal arts colleges. Evidence indicates that teachers are coming more and more from larger institutions. Although the teachers colleges and liberal arts colleges still prepare more elementary-school teachers than the universities and land-grant colleges, the larger institutions are gaining ground even in this field of teacher education.

The large multipurpose institutions are organized in various ways to plan and administer their programs of teacher education. Roughly, the organization falls into three patterns as follows: (1) The college or school of education has full responsibility for the students and their educational programs from the time they enter the institution until they are graduated and recommended to the State department of

Table 65.—Distribution of teachers prepared, 1949–50, by type of institution

Designation of institutions	Number of teachers prepared			Percent of teachers prepared		
	Elementary	High school	Total	Elementary	High school	Total
Teachers colleges	12,475	14,489	26,964	33.6	16.9	21.9
Public colleges and universities	11,592	34,548	46,140	31.1	40.2	37.4
Private colleges and universities	10,510	33,533	44,043	28.3	38.9	35.8
Professional and technical schools	72	3,354	3,426	.2	3.9	2.8
Junior colleges	2,522	123	2,645	6.8	.1	2.1
Total	37,171	86,047	123,218	100.0	100.0	100.0

Source: "Accreditation and Professionalization of Teaching" by T. M. Stinnett. *The Journal of Teacher Education*, vol. III, No. 1, March 1952, p. 34.

education for certification as teachers. (2) The college or school of education has full responsibility for some students preparing to teach, beginning with the freshman year, and for some beginning with the junior year. For others, the college or school shares responsibility with other colleges and schools on the campus, such as agriculture, arts and sciences, home economics, and physical education. At times this sharing takes the form of joint registration in the two units of the institution, and at other times it takes the form of joint planning of curriculums by the units of the institution concerned. (3) The unit specifically concerned with teacher education is generally a department within a college or school, usually within the school of arts and sciences. The major responsibility of the department of education in this type of organization is to offer professional courses in psychology, sociology, philosophy, and methods as desired by the faculty of the school of arts and sciences. If the institution under this type of organization has in it colleges or schools of business, home economics, physical education, or agriculture, such units usually plan and control their own programs for the education of teachers.

Accreditation for Teacher Education

According to reports from State departments of education, a total of approximately 1,200 colleges and universities were preparing teachers in 1953. Of this number, 300 have no accreditation except that which comes with approval by their respective State departments to prepare teachers. In all but 9 States, authority to prepare teachers is specifically granted by the State departments of education, usually on recommendation of a visiting team. Colleges and universities in those 9 States are not required to have approval by any agency; they simply offer the courses required for certification by the State departments of education if they wish to prepare teachers. The remaining 900 institutions are accredited by their respective regional accrediting bodies for all-round excellence as institutions of higher learning, and 284 of them by the American Association of Colleges for Teacher Education specifically for teacher education. The latter number is approximately 25 percent of the total number of institutions now preparing teachers. It is noteworthy that the 25 percent accredited specifically for teacher education prepare approximately one-half of the teachers each year.

Beginning July 1, 1954, the National Council for Accreditation of Teacher Education became the official body for the specific accreditation of teacher education institutions and programs. From 1927 to 1954 the American Association of Teachers Colleges and its successor, the American Association of Colleges for Teacher Education, provided the only accreditation for teacher education available except that which was done incidentally by the regional accrediting bodies in their general accreditation of colleges and universities. The American Association of Colleges for Teacher Education still is involved in the accreditation function through its representation in the new National Council for Accreditation of Teacher Education.

The council is made up of 21 members as follows: 6 from colleges and universities, appointed by the American Association of Colleges for Teacher Education; 6 from State departments of education, 3 of which are appointed by the State directors of teacher education and certification, and 3 by the State Commissioners of education; 6 teachers and administrators from the schools, appointed by the National Commission on Teacher Education and Professional Standards of the National Education Association; and 3 school board members appointed by the National Association of School Board members. Its functions are to determine the standards which teacher education programs must meet in order to be accredited and to set up procedures for the administration of standards in those institutions which apply for national accreditation. The council expects to work closely with the State accrediting bodies and the six regional accrediting associations, especially in the application of its standards.

Graduate Programs

Practically all of the major universities and many of the teachers colleges offer graduate programs for teachers and educational leaders. Some of these lead to master of arts and master of education degrees, to doctor of philosophy and doctor of education degrees, and to intermediate degrees (between the master's and the doctor's) with various titles. Usually the master's degree requires 1 year beyond the bachelor's degree, and the doctor's degree 2 years beyond the master's degree. Most of the institutions offering graduate work in education list curriculums especially designed for the preparation of educational leaders, such as school principals, supervisors, and superintendents. Some of these programs leading to both the master's and the doctor's degree are made up entirely of courses in professional education. Other programs either require or strongly recommend that the student preparing for educational leadership take some work in the regular academic departments, especially in the social studies.

Until recently, few graduate curriculums were designed especially for the regular elementary- and secondary-school classroom teachers. There is a trend, however, toward offering such curriculums. These programs usually provide for an extension of the teacher's knowledge in some subject-matter field and in one or more aspects of professional education. Such programs lead to the master's degree, with a few extending as far as an intermediate degree.

Little has yet been done to standardize through accreditation any of the programs of graduate work for school personnel. The American Association of Colleges for Teacher Education was making a beginning in this area when it gave up accreditation. Much of the work leading to graduate degrees for teachers and educational leaders is offered either in the summer sessions or at times when teachers in regular service can take it. Usually the amount of graduate work which a teacher doing full-time teaching may take is limited to 3 semester hours each semester. The amount that may be taken off campus is also generally restricted to approximately one-third of the total program leading to the advanced degree.

Some Current Problems

All professions, and particularly those growing in numbers and status, have their problems. The teaching profession faces especially difficult problems because it must consider first the welfare of society and, second, its own advancement. Bearing in mind both of these considerations, some major problems of the profession that are related to the education of teachers are outlined in the following paragraphs.

1. *State organization for teacher education.*—Responsibility for the education of teachers has come to be centered in State departments of education. While the colleges and universities provide the programs, they do not provide the State framework within which these programs must fit. Many State departments of education are in an awkward position to work effectively with all of the institutions within the State because organizationally they do not bear the same relationship to all. Often the teachers colleges are under the direct control of the State department of education, which makes for a close working relationship with them. The State university and the land-grant colleges are somewhat farther removed organically than the teachers colleges. The private institutions are farthest from the State department of education. These conditions are rooted in history, but they create a problem for State departments of education that work with all of the groups concerned with teacher education. Clearly, what is called for is an organizational pattern which will put the State department of education in the same relationship to all of the institutions with which it must deal in the education of teachers.

2. *Institutional organization for teacher education.*—Because teacher education consists largely of understandings and skills which are derived from disciplines outside the field of professional education, the problem of institutional organization for its planning and administration becomes very difficult. As pointed out in another section, responsibility for the teacher education program in many institutions is very vaguely defined, if at all. This lack of a clear-cut organizational structure for the planning and administration of teacher education weakens the program in a number of ways. In the first place, students and faculty are left confused and uncertain as to the program and policies which govern it. In the second place, such division of responsibility makes for a highly segmented program with no

unifying thread running through it. At its worst, some programs are in direct conflict philosophically with other programs within the same institution. And, in the third place, persons outside the institution, such as parents, school administrators, and officials of the State department of education, are unable to fix responsibility for weakness or to give credit for strength in the program. A few State departments of education and some institutions are working on this problem, but have not yet found a solution of wide application.

3. *Facilities for teacher education.*—Facilities for teacher education have been greatly improved within the past decade, especially in teachers colleges and in State colleges that were once teachers colleges. They are not yet adequate, however, even in the teachers colleges, and often far from adequate in liberal arts colleges and in large multipurpose institutions. The inadequacies lie largely in classroom space designed for professional education, materials libraries, and laboratory facilities for work with children in typical school situations. Many institutions that are without campus laboratory schools do not have adequate transportation facilities to get students to and from the schools and communities with which they have developed working relationships. Facilities are not an acceptable substitute for a good program of teacher education, but they are a mark of the concern of the institution for its program.

4. *Improved curriculums for the preparation of teachers for the various positions.*—Curriculums for the preparation of teachers for the various positions in the schools should take into account not only the competencies needed by persons to fill those positions but a number of additional factors. The effects of such curriculums on the kinds of persons who will enroll in them and on the teaching profession itself, to use two examples, should be considered. It is not easy to develop a curriculum for a teaching position that will appeal to able persons, will make it possible for persons completing it to shift from one kind of position to another, and at the same time will provide the major competencies needed for a particular position. The conditions which the teaching profession faces, however, require that adjustments of the curriculums be made.

5. *Certification of teachers.*—The certification of teachers is still in a chaotic condition. Basic decisions have not yet been made on a wide front. On such problems as the major elements that should constitute a program of teacher education, the kinds of responsibility that will be placed upon institutions in the total certification procedure, and the bases on which reciprocity can be practiced among the States, there is still no general agreement. Progress is being made on all three of these major problems, but much yet remains to be done.

6. *Leakage in supply provided by the colleges.*—Colleges and universities can probably be counted upon to prepare approximately 100,000 teachers each year for the foreseeable future. The schools, however, cannot depend upon having this number of new teachers available each year because some who prepare never accept teaching positions. The percentage lost between graduation and teaching varies from State to State and among the different teaching positions. The most reliable information available, however, indicates that, all States and all positions included, the loss between graduation and teaching is more than 25 percent. Obviously, this is now one of the most serious problems in teacher education. Some of the causes may be found in the curriculums, the certification requirements, and the internal organization of institutions that prepare teachers.

7. *Basic data for planning.*—No one knows with reasonable certainty how many teachers in the United States now hold certificates authorizing them to occupy some kind of school position. Data showing fully the supply, the potential for supply, and complete information on the factors in the demand are available in only a few State departments of education. One of the fundamental problems, then, in teacher education is to assemble the necessary information on the basis of which further improvements in teacher education can be made.

EDITOR'S NOTE.—*Inasmuch as the number of institutions of higher education which prepare teachers is extensive, no list is given in this article. Such a list would include most of the colleges and universities.*

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28. Theological Education: Jewish

By SEYMOUR SIEGEL*

JEWISH theological education is essentially the professional education of the rabbi, or religious leader. This leader officiates at the religious exercises of the congregation, but his principal service is to teach and interpret Jewish belief, law, and tradition.

Judaism has for many centuries made provision for the education of its leaders. At an early time there were developed by the Jews schools which came to be known as yeshivot (singular, yeshiva). During the Middle Ages these institutions spread to Europe, and in the 19th century a number were established in the United States. Some of them later took the name rabbinical college or seminary. Other schools for the education of rabbis, particularly in recent years, were established as colleges or seminaries.

Judaism in the United States

Though Jewish congregations have functioned on the American continent since 1654, the great influx of Jews from Central and Eastern Europe during the past 75 years, together with the brutal destruction of European Jewry by Hitler, has made America a main center of world Judaism. Today there are about 5 million Jews in the United States. Judaism has about 3,500 congregations in 1,000 communities, and about 4,000 rabbis.

American Jewish congregations are organized into federations roughly falling into the three categories of orthodox, conservative, and reform. The lay organization from which Orthodoxy in America derives its chief strength is the Union of Orthodox Jewish Congregations of America. The Conservative congregations are united in the United Synagogue of America; and the Reform congregations in the Union of American Hebrew Congregations.

There exist as well three main rabbinical associ tions: The Rabbinical Council of America (Ortho dox); Rabbinical Assembly of America (Conserva tive); and the Central Conference of America Rabbis (Reform). These rabbinical groups coope ate in various activities such as the Synagogue Coun cil of America and the Division of Religious Activi ties of the Jewish Welfare Board which supervises and assists Jewish chaplains serving in the Armed Forc Another sizable organization is the Union of Ortho dox Rabbis of the United States and Canada. I is not a member of the Synagogue Council nor doe it work with the Jewish Welfare Board, Division o Religious Activities Committee.

The Rabbi

In the earliest period of Jewish history, th religious and spiritual functions of the communi were divided among the prophets, the priests, an the scholars. It was not until the first century of th common era that the title "rabbi" came into us The literal translation of the title—"my teache "my master"—perhaps best describes the functio performed. The title was used for those who we distinguished for their learning, who were recogniz as authoritative teachers of Jewish law. The ti could be obtained by anyone who merited it throu his learning and piety. The duties of the rabbi, un at least the 15th century, were quite different fro those of the modern official ministers. In almo all cases the rabbi had a private occupation—in ea times he was often a manual laborer such as a cobbl or a smith—which was separate from his teachi duties. He usually conducted a school or *yeshi* He might receive an appointment as the preside of the community, or the head of the judiciary. B these were honorary appointments and witho salary. In any case, the rabbi was expected to be th master of the civil and ritual laws, to be the leader i charitable works, and set an example for high mo conduct.

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When, in the 15th century, it became customary to pay the rabbi a stipulated salary for his services, his functions became more clearly defined and included the establishment and conduct of a court, the supervision of a school, the administration of the dietary laws, and participation in marriage, funeral, and other ceremonies. He was still expected to devote himself primarily to study, and he continued to be the authority of the community on questions of ritual and civil law. Essentially, therefore, the rabbi was expected to be a learned man. By virtue of his attainments, he was highly respected in the community and set an example for piety and scholarship.

In modern times, the influence of the national state profoundly affected the position of the rabbi in the Jewish community. The judicial functions of the rabbi became less important, and he was now expected to become master of the secular disciplines as well as the ancient lore of Judaism. In order to meet the changed conditions, the duties of the rabbi had to undergo partial revisions. The differences in the approach of various groups toward the position of the rabbi also became evident.

However, even today, the rabbi is essentially a teacher. His presence is not technically required for any religious ceremony. The Jewish religion permits any man to officiate at such services provided he has sufficient knowledge. Hence, the rabbi will always remain primarily an expounder and interpreter of Jewish law and tradition. Although the modern need for a professional rabbinate has made it customary for the rabbi to officiate as the leader of the congregation, his primary function is that of teacher, guide, and interpreter.

Evolution of Rabbinical Training

As the functions of the rabbi broadened, methods for his education and training were developed and expanded. In the earliest times, religious leaders were trained in academies of the large cities which also served as courts, legislatures, and universities. Discussions were held daily over a wide variety of subjects. Important decisions were reported and preserved. These institutions were not oriented primarily to the professional preparation of the religious functionary; they were communities of scholars where the law was interpreted and taught.

The academies which grew up in the Palestinian and Babylonian centers were transplanted in the form of the yeshivot in Europe during the Middle Ages. These schools taught primarily Talmud—Jewish civil and canonical law. The only requirement for admission was knowledge of the Law and a good character. These schools were attended by men of all ages, laymen as well as professional scholars. The yeshivot were maintained by the local communities, and the students were either economically independent or were supported by the local community. The students often traveled from one community to another in order to study with oustanding rabbis and scholars.

The European yeshivot were in turn transplanted to the American shores with changes in the curriculum to meet the situation in America. With the establishment of the modern rabbinical seminary, a turning point was reached in theological education. For the first time schools were devoted expressly to the preparation of young men for the professional rabbinate. These seminaries attempted to bring about a reconciliation between the Jewish tradition and the modern scientific spirit. The rabbis were expected not only to be well acquainted with the Jewish religious tradition but also to be well versed in general secular affairs. Some national governments also demanded a certain degree of general education from candidates for rabbinical offices. The result was that the curriculum of the yeshivot was expanded in the seminaries to include a wider variety of subjects, and knowledge of secular subjects became increasingly important in qualifying for admission.

The seminaries varied according to the view of the particular group which sponsored them. The orthodox group wished to retain the traditional elements *in toto* and made only slight revisions in their requirements for admission and curriculum. The reform group put less emphasis upon the study of Talmud and added many new subjects to the course of studies. The conservative group sought to maintain a position between both viewpoints.

In the United States there is a group of outstanding seminaries devoted to the training and ordination of young men for the rabbinate. Five of these institutions are mentioned in the following sections. There are a number of other seminaries, but these five well represent Jewish theological education.

The rabbinical seminaries and colleges have not formed an organized association, and there is no accrediting agency which standardizes and approves their educational programs.

Orthodox Seminaries

The best known of the several seminaries identified with the orthodox group is the Rabbi Isaac Elchanan Theological Seminary of New York City. It was established in 1896. The seminary now forms the nucleus of Yeshiva University, which includes eight schools and divisions, among them an undergraduate liberal arts college, graduate schools, and a projected medical school. The seminary consists of preparatory, junior, and senior divisions. The educational program "is designed to acquaint the student with all facets of Jewish knowledge and to give him a well rounded and thorough acquaintance with all aspects of Jewish learning." Students completing the required course of study and holding a bachelor of arts degree may take the comprehensive examination for rabbi.

The Hebrew Theological College in Chicago developed out of a school opened in 1912; it was chartered in 1922. To be admitted to the Rabbinical Division an applicant must be at least 15 years old and be a graduate of the Preparatory Department or possess knowledge equivalent to what is required from that department. The curriculum leading to ordination as rabbi is 9 years in length.

The Ner Israel Rabbinical College in Baltimore was founded in 1933 and chartered in 1934. The minimum entrance age is 17 years, and the applicant must be a high school graduate. A minimum of 6 years is required to complete the curriculum and to attain ordination as rabbi. The curriculum of the college is designed to provide the student with a comprehensive grasp of Biblical and Talmudic knowledge and at the same time to acquaint him with the problems faced by the American Jewish community today, with special stress on education.

Conservative Seminary

The Jewish Theological Seminary of America in New York is the center for the education of rabbis which serve Conservative congregations. It was founded in 1887 and reorganized in 1902. The Rabbinical School department offers courses which lead to the degree of rabbi and master of Hebrew literature. The minimum course of studies extends over a 4-year period. Candidates for admission must hold a degree of bachelor of arts or bachelor of science from a college of recognized standing. In addition to meeting academic requirements they must be loyal adherents of the observances of traditional Judaism including the Sabbath, Holy Days, daily praye and dietary laws.

Students who have not received the required co lege degree but satisfactorily pass examinations Bible, Hebrew, and Talmud may be preenroll in the Rabbinical School and be admitted to th undergraduate department. The courses in th department are arranged to enable students to fini their college program, and, at the same time, complete their preparation in Jewish studies for e trance into the graduate department. This cour of instruction is organized in cooperation with th Seminary College of Jewish Studies and other i stitutions of higher Jewish learning.

Reform Seminary

The Hebrew Union College—Jewish Institute Religion—is the institution which educates Refor rabbis. It represents the merger of two rabbinic schools. The Hebrew Union College in Cincinnat Ohio, was founded in 1875 "to strengthen an advance the cause of liberal American Judaism an to create a united American Jewry." It is now th oldest surviving rabbinical seminary in the Unite States. The Jewish Institute of Religion w founded in New York in 1922 also "to help devel liberal Judaism in America." The two institutio were merged in 1950; the College-Institute maintai two schools, one in Cincinnati and the other in Ne York.

For admission to the College-Institute applica must have the bachelor of arts degree or its equiv lent from an approved college or university. Th degrees of bachelor of Hebrew letters (B. H. L) a master of Hebrew letters (M. H. L.) and the tit "rabbi" are conferred.

The normal program leading to ordination requi 5 years, with a minimum residence requirement of A sixth, or intern, year has just been added to t normal program of students enrolled in 1952 a subsequently. The program leading to the bach lor's degree requires 72 semester hour credits prescribed courses. In addition to these credits, t candidate for ordination as rabbi must obtain further 104 semester hour credits, most of these prescribed courses, and he must complete other quirements, which include a rabbinic dissertation.

Qualified candidates for admission, who do n yet possess the bachelor of arts degree, are admitt as pretheological students, and at the Cincinn school such students may take a limited number prerabbinic courses while completing their bachelor of arts program at the University of Cincinnati. These and other courses at the College-Institute are accepted for credit at the University of Cincinnati towards the requirements for the bachelor of arts degree.

Enrollments

The number of students enrolled in the spring of 1953 in the 5 Jewish theological institutions described came to 1,151, of which 156 were graduate students. (See table 66.)

In addition to these five institutions there are others that train rabbis. A report issued in 1950 by the National Headquarters of the Selective Service System listed the 5, and 10 others, as "recognized" by the Director of Selective Service.[1] Reports from 14 of the schools showed the following enrollments: 1947, 1,932; 1948, 2,012; 1949, 2,139; 1950, 2,225.

Table 66.—Enrollment in 5 Jewish theological institutions, spring of 1953

Institution	Undergraduate students pursuing courses for ordination	Graduate students	Total
Hebrew Union College—Jewish Institute of Religion:			
In Cincinnati	96	49	145
In New York	44	5	49
Total	140	54	194
Hebrew Theological College	146	23	169
Jewish Theological Seminary of America	115	74	189
Ner Israel Rabbinical College	124	5	129
Rabbi Isaac Elchanan Theological Seminary	[1] 470	([2])	470
Total	995	[3] 156	1,151

[1] Junior and senior divisions; 160 additional in the preparatory division.

[2] Graduate students in Jewish studies enroll in the Bernard Revel Graduate School or the Harry Fischel School for Higher Jewish Studies of Yeshiva University.

[3] Students pursuing courses after ordination.

Over the years the 5 institutions have ordained 2,196 rabbis. (See table 67.)

Table 67.—Number of rabbis ordained by 5 Jewish theological institutions

Institution	Year in which the institution began to ordain rabbis	Total number of rabbis ordained
Hebrew Union College—Jewish Institute of Religion:		
In Cincinnati	1883	561
In New York	1926	226
Total		787
Hebrew Theological College	1925	178
Jewish Theological Seminary of America	1894	534
Ner Israel Rabbinical College	1934	122
Rabbi Isaac Elchanan Theological Seminary	1919	575
Total		2,196

Reports recently received from 8 institutions not named above indicate the following current enrollments in the rabbinical curriculum: Central Yeshiva Tomche Tmimim Lubavitz Rabbinical Seminary, Brooklyn, N. Y., 194; Mesifta Talmudical Seminary, Brooklyn, N. Y., 318; Mesivtha Tifereth Jerusalem Rabbinical Department, New York, N. Y., 65; Rabbi Jacob Joseph School and Mesifta, Mesifta and Seminary Division, New York, N. Y., 430; Yavne Hebrew Theological Seminary, Brooklyn, N. Y., 75; Yeshiva Rabbi Chaim Berlin Rabbinical Academy, Brooklyn, N. Y., 236; Yeshivath Beth Yehudah Department of Rabbinics, Detroit, Mich., 11; Yeshivath Chachmey Lublin Theological Seminary, Detroit, Mich., 94; Rabbinical College of Telshe, Cleveland, Ohio, 200; Rabbinical Seminary of America, Brooklyn, N. Y., 96. (This paragraph was supplied by the Editor.)

The Curriculum

Although the subjects of the curriculum in the rabbinical seminaries vary somewhat with the institutions, the fields usually included are: Bible, Talmud and commentaries, Codes, Hebrew, Hebrew literature, Jewish history, Jewish philosophy, theology, and homiletics. The emphasis on these subjects is somewhat different in the seminaries of the three Jewish groups. The program of the Reform seminary includes Jewish education and Human Relations.

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[1] Neal M. Wherry, *Theological School Enrollments, 1937–47, 1947–50;* A Survey Study of 561 Recognized Theological Schools. National Headquarters, Selective Service System, Washington, D. C., August 1950. The 10 schools were: Beth-Medrosh Govoha of America, Lakewood, N. J.; Los Angeles Jewish Academy, Los Angeles, Calif.; Mesifta Talmudical Seminary, Brooklyn, N. Y.; Mesivtha Tifereth Jerusalem Rabbinical Seminary, New York, N. Y.; Rabbinical College of Telshe, Cleveland, Ohio; Rabbinical Seminary of America, Brooklyn, N. Y.; Yavne Jewish Theological Academy, Brooklyn, N. Y.; Yeshiva Beth Joseph Rabbinical Seminary, Brooklyn, N. Y.; Yeshiva Rabbi Chaim Berlin, Brooklyn, N. Y.; Yeshivath Chachmey Lublin, Detroit, Mich. A number of these institutions were originally established in European countries and later transplanted to the United States.

The admission requirements usually specify knowledge of the Bible, the Talmud, and Hebrew. The applicants are required to take entrance examinations in these and other subjects.

Before the student is ordained as a rabbi he is required to pass a comprehensive examination.

Graduate Work

Graduate study may be pursued in Hebrew letters and cognate studies in the seminaries and other institutions of higher Jewish learning. Thus the degree of doctor of Hebrew literature (D. H. L.) may be obtained at the Jewish Theological Seminary of America and the Yeshiva University; and the degree of doctor of Hebrew letters at the Hebrew Theological College and the Hebrew Union College-Jewish Institute of Religion. The Jewish Theological Seminary confers the degrees of master and doctor of theology in Jewish law, and the Ner Israel Rabbinical College offers the degrees of master and doctor of Talmudic law.

The degree of master of Hebrew literature (M. H. L.) is earned at the Jewish Theological Seminary of America in the regular course of studies which leads to the degree of rabbi. It may be taken one semester before ordination at the Hebrew Union College-Jewish Institute of Religion. At the Yeshiva University the master of Hebrew literature may be earned by one who holds a bachelor's degree from a recognized college or university, or its equivalent, and who has a thorough knowledge of rabbinics. The Hebrew Theological College offers the degree of master of Hebrew letters.

The degree of doctor of philosophy may be obtained in various aspects of Hebrew and Semitic studies at the Jewish Theological Seminary of America, the Yeshiva University, and the Hebrew Union College-Jewish Institute of Religion. Dropsie College in Philadelphia, a graduate institution of Hebrew and cognate studies, also confers the degree of doctor of philosophy.

A considerable amount of this graduate work is not limited to Jews; some of it is available to anyone with proper scholarly accomplishments who desires to do graduate study in Jewish subjects and Hebrew. Several interfaith fellowships are available for doctor of philosophy candidates at the Cincinnati school.

Problem

The greatest problem which faces the rabbinate today is to provide the manpower to fill the demands for Jewish spiritual leadership. Recent decades have seen a great rebirth of religious feeling among Jews, and many new congregations have been organized. This situation has been aggravated by the demands of the Armed Forces for rabbis to serve the men in the military establishments. Over 130 rabbis are now in uniform as chaplains. The situation has led to efforts to increase the enrollments in the seminaries. To a large degree the campaign has succeeded.

The feeling among the leaders of Jewish theological seminaries is that the growth of rabbinical schools will aid in asserting America's spiritual leadership in the world of today and tomorrow. They are attempting to provide the interpreters and teachers of Judaism's ancient traditions so that it can speak anew to the present generation.

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Janowsky, Oscar I. (*ed.*). *The American Jew: A Composite Portrait.* New York, Harper and Brothers, 1942. 322 p.

Universal Jewish Encyclopedia (10 vol.). New York, The Universal Jewish Encyclopedia, Inc., 1943. Articles: Central Conference of American Rabbis; Judaism; Judaism in America; Ordination; Rabbi and Rabbinate; Rabbinical Assembly of America; Rabbinical Associations; Rabbinical Council of America; Rabbinical Seminaries; Reform Movement; Synagogue; Union of Orthodox Rabbis of the United States and Canada; Yeshiva.

29. Theological Education: Protestant

By OREN H. BAKER*

EACH of the Protestant religious denominations in the United States has provided for the education of its clergy in terms consonant with its tenets and sense of mission. The larger denominations have been devoted to the ideal of education from the beginning of their history and have established special educational requirements for the ordination of their ministers. Other groups have been slow to adopt such a policy, feeling that education, especially on the higher levels, is a threat to simple faith and tends to separate the clergyman from his people. In recent years, however, there has been a steady advance in nearly all groups toward a functional view of religion in relation to modern life. This has been a notable characteristic of the older denominations and has produced a new emphasis upon the ministry as a profession as well as a calling. The story of this development will disclose some of the major trends in theological education today.

Protestant Churches in the United States

The Protestant religious bodies in the United States in 1950 totaled 229.[1] Most, but not all, of these groups stem directly from the influences of the Reformation. These religious denominations had 247,362 congregations and a membership of 50,074,138. The number of settled pastors in the churches was 162,893. These figures represent the field accessible to graduates of theological seminaries and do not include those sects which do not emphasize higher education for their ministry.

Origins and Motivation

The Protestant interest in an educated ministry began formally in the United States with the founding of Harvard College in 1636 and Yale College in 1701. During the period extending through these years to the latter part of the 18th century, courses in divinity were taught within the pattern of general education. By 1784 these studies had become distinct at Harvard and were finally separated in 1819 under a Faculty of Theology. At Yale a similar development led to the establishment of a divinity school in 1822. The tendency toward separation was thus well advanced by the end of the 18th century. By this time also the movement to establish institutions without connection with colleges had begun. Two schools of this type were in existence before 1800.

During the first quarter of the 19th century 18 seminaries representing 11 denominations, were organized, but the period of greatest increase occurred in the third quarter, 1850–75, when 71 new schools appeared, a development paralleling the expansion of the churches toward the West and the post-Civil-War reconstruction.[2] Unfortunately, it cannot be said that the rapid numerical growth of these schools was accompanied by a corresponding improvement in the standards of the education provided.

In the main, the founding of theological schools has followed denominational lines and expressed the impulse of the churches to conserve their distinctiveness by educating their own leadership. Although Harvard became an undenominational school in 1816, and some schools organized much later have cast aside the sectarian label, the denominational interest continues to be the predominant characteristic of the Protestant schools. This statement, however, should be qualified by the observation that within the last half century a theological interest, not defined by denominational character, has played a part in the founding of some schools, and there is a growing tendency to identify institutions by theological criteria as well as denominational peculiarity. While ecclesiastical considerations are still important generally, the weakening of denominational lines has led many schools to open their doors to students from communions other than their own without restriction of privilege. This interpenetration reaches its peak in the undenominational schools which are associated with universities and conduct education at a graduate level, offering a broad scholarly basis for the examination of all theological points of view. Notable among these are Chicago, Harvard, Oberlin, Union (in New York), Vanderbilt (School of Religion), and Yale.

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[1] *Yearbook of American Churches*, 1952 edition, National Council of the Churches of Christ in the United States of America, New York, 1952, p. 234–51.

[2] William Adams Brown, *The Education of American Ministers*, volume I, *Ministerial Education in America*, New York, Institute of Social and Religious Research, 1934, p. 79–81.

Educational Types

A research study of the education of American ministers, published in 1934, defined a theological institution as "one that offers a course of studies arranged primarily for the training of ministers, and gives at the completion of this course a theological degree, certificate, or diploma." Observing a wide variation in the educational standards of the schools so broadly characterized, the same study classified them into four types: (1) Independent theological institutions, designated as "schools, seminaries, and foundations"; (2) postgraduate theological departments, "schools or seminaries of colleges and universities"; (3) undergraduate theological departments of colleges; and (4) Bible schools.[3] The predominant tendency in types (1) and (2) is to admit only students who have received a bachelor of arts degree or its academic equivalent. Such schools confer the bachelor of divinity degree at the end of the course, and may make provision for advanced study leading to higher theological degrees. The schools in types (3) and (4) accept students of lower academic attainment than college graduation and may provide for the training of lay workers in the churches. The variations within this pattern of classification are such as to make accurate generalization difficult, but the main tendency is in the direction indicated.

Accreditation

The period of most significant advance in Protestant theological education dates from the year 1918 when the Conference of Theological Seminaries and Colleges of the United States and Canada was formed at Harvard University. This organization was composed of representatives from the leading institutions of the two countries and immediately set itself to the task of reconsidering the aims and methods of theological education in the light of the responsibilities confronting the churches in the new challenges of the 20th century. During the next 18 years, the conference met biennially for action on reports and the reading of papers bearing on educational problems. In 1924 a study of theological education, conducted by Robert L. Kelly under the auspices of the Institute of Social and Religious Research, quickened interest in a more thorough examination of the seminaries. Ten years later, the institute, inspired by the conference, published *The Education of American Ministers*, a four-volume work presenting facts, analyses, and conclusions concerning typical institutions engaged in the training of religious leaders.

The appearance of this study marked the beginning of an era in theological education. At its biennial meeting in 1936, the conference changed its name to The American Association of Theological Schools and reorganized its affairs under a new constitution. The most important action was the adoption of a body of standards to be used as the basis of accreditation and the appointment of a commission on accrediting to administer it.[4]

In 1938 the first list of accredited schools appeared. It included 46 institutions, 2 of which were Canadian. The latest list, published in 1954, contains 76 schools, 6 of which are Canadian. The membership of the association, however, is larger than this number. It includes institutions which desire to share in the work of theological education and have been elected to membership on the recommendation of the executive committee. It should be emphasized that eligibility for membership in the association, as well as accreditation, is based strictly on educational standards without reference to theological position. Another important achievement in recent years has been the preparation of a standard curriculum of preseminary studies for the guidance of pretheological students in the colleges.

An organization known as the Accrediting Association of Bible Institutes and Bible Colleges was formed in 1947. The educational field of Bible accredited by the association is considered undergraduate as distinguished from the field of theology, which is graduate; also, it is considered as somewhat broader than the field of religious education. Accreditation may be either (1) collegiate, for institutions that grant degrees, or (2) intermediate, for institutions that do not offer degrees. Currently the accredited list includes 27 schools of the collegiate group (one of these offers only a 3-year curriculum leading to a diploma) and 16 of the intermediate group.

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[3] Mark A. May in collaboration with William Adams Brown, Charlotte V. Feeney, R. G. Montgomery, and Frank K. Shuttleworth, *The Education of American Ministers*, volume III, *The Institutions That Train Ministers*. New York, Institute of Social and Religious Research, 1934, p. 3, 4.

[4] American Association of Theological Schools, *Bulletin II*, 1936.

Enrollments

Complete and accurate data on enrollments in Protestant theological institutions are not available, but some information is at hand which indicates the general magnitude of the number of persons involved.

The enrollment in the 73 accredited theological schools (5 of them Canadian) was 14,971 in 1950.

The National Headquarters of the Selective Service System in 1947, and again in 1950, made questionnaire surveys of the theological or divinity schools recognized by the Director of Selective Service. These "recognized schools" included only schools which had made requests for recognition. A study of the list shows that it contained a great variety of institutions.

The survey in 1950 reported data from 280 Protestant schools.[5] It showed the number of full-time male students in these institutions preparing for the ministry as: 1947, 23,475; 1948, 25,435; 1949, 28,261; 1950, 29,316; 1953, 27,577.[6]

Admission

An accredited theological school admits to candidacy for the bachelor-of-divinity degree only those students who have received the bachelor of arts, *based upon 4 years* of study beyond the secondary level, "from a college approved by one of the regional accrediting bodies, or the equivalent of such a degree." [7] In addition to this basic requirement, character qualifications are universally recognized including formal endorsement by the religious group to which the applicant belongs. Psychological testing is gaining favor in the admission practices of the more educationally minded institutions. Personality traits are increasingly subjected to scrutiny to determine the fitness of the student for Christian leadership and to provide a basis for corrective measures while he is in the seminary.

Curriculum

Throughout their history, the curriculums of the Protestant seminaries have reflected the interests and needs of the various denominations. The standard curriculum recommended by the American Association of Theological Schools divides the studies into four major fields: Biblical, historical, theological, and practical.[8] Variants of these terms will be found in the published announcements of individual schools, but most of their offerings fall within these categories. The most significant recent development in the theological curriculum has occurred in the increased response of the schools to the practical or operational demands of the churches. Hebrew and Greek, once universally required, have been shifted gradually to an elective status, while new studies involving psychology, sociology, religious education, and administrative functions have become increasingly prominent.

To this broadened base of classroom activity, many schools have added a requirement in field work whereby the student is regularly engaged in the actual conduct of church responsibilities under the supervision of the faculty. As an alternative to this, some seminaries expect the student to spend a year as intern under the direction of a pastor in an approved church. For a limited number of students, internships ranging from 3 months to a year are available in mental and general hospitals and correctional institutions. When this work is done under competent supervision, credit may be given toward the bachelor of divinity degree. The central focus of all these disciplines is on the task of the pastoral ministry. There are, however, provisions in practically all seminaries for specialization in teaching, social service, rural church, industrial and labor relations, and the chaplaincies.

Requirements for graduation in the accredited seminaries average slightly more than 90 semester hours, which are distributed over the four major divisions of studies. Most of the schools have a combination core, or prescribed, curriculum ranging from one-half to two-thirds of this total, and an elective curriculum for the remainder. The bachelor of divinity degree, based on a 3-year course of study following college graduation, is the recognized professional degree for the Protestant ministry. The equivalent of this degree, the bachelor of sacred theology, is used in a few of the accredited schools. Institutions offering the master of theology (or the M. S. T.) and the doctor of theology require residence of 1 and 2 years, respectively, with a dissertation, beyond the bachelor of divinity.

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[5] Neal M. Wherry. *Theological School Enrollments, 1937-1947, 1947-1950: A Survey Study of 561 Recognized Theological Schools.* National Headquarters, Selective Service System, Washington, D. C., August 1, 1950.

[6] *College and University Bulletin*, published by the Association for Higher Education, Dec. 1, 1953.

[7] American Association of Theological Schools, *Bulletin 19*, 1950, p. 9, 10.

[8] American Association of Theological Schools, *Bulletin 20*, 1952, p. 10.

Current Problems

Foremost among the problems confronting Protestant theological education in the United States is the diversity of educational standards which prevail. This is explicit in the fact that out of a total of 174, only 70 schools are accredited. Increasing awareness of this by responsible leaders and the existence of accreditation itself promise much in the way of improvement. A second issue related to the first is the fact that less than half of the ministers serving Protestant churches have had an educational preparation equivalent to college and seminary graduation. A third problem is the economic risk which deters able young men from entering a vocation whose salary level is incommensurate with the quality of service an educated man can give. A few denominations have established minimum salaries, but the majority have not awakened to the significance of this factor in providing a better ministry. Overchurching in small communities further complicates this issue.

In general, it may be said that most of these problems are the result of the Protestant tendency toward variety, competition, and individualism in religion. Counterinfluences are at work along lines of consolidation, federation, and cooperative planning, but the effective operation of these forces waits upon the yielding of resistances rooted in vested interests and educational conservatism.

Schools and Enrollments

The names and the 1953-54 enrollments of the 70 schools in the United States accredited by the American Association of Theological Schools are shown below. The first figure indicates the number of students pursuing work for the first professional degree; the second figure indicates the number working for degrees beyond the first professional degree.

CALIFORNIA

Berkeley Baptist Divinity School, Berkeley, 111, 10
Church Divinity School of the Pacific, Berkeley, 84, 0
Pacific School of Religion, Berkeley, 110, 5
San Francisco Theological Seminary, San Anselmo, 222, 12
University of Southern California Graduate School of Religion, Los Angeles, 0, 119

COLORADO

Iliff School of Theology, Denver, 0, 155

CONNECTICUT

Berkeley Divinity School, New Haven, 99, 3
Hartford Theological Seminary, Hartford, 54, 10
Yale University Divinity School, New Haven, 384, 16

DISTRICT OF COLUMBIA

Howard University School of Religion, Washington, 42, 0

GEORGIA

Candler School of Theology, Emory University, 398, 10
Columbia Theological Seminary, Decatur, 152, 21
Gammon Theological Seminary, Atlanta, 56, 1

ILLINOIS

Augustana Theological Seminary, Rock Island, 242, 0
Bethany Biblical Seminary, Chicago, 132, 1
Chicago Lutheran Theological Seminary, Maywood, 100, 40
Chicago Theological Seminary, Chicago, 91, 15
Evangelical Theological Seminary, Naperville, 155, 0
Garrett Biblical Institute, Evanston, 431, 0
McCormick Theological Seminary, Chicago, 328, 0
Meadville Theological School, Chicago, 14, 1
Seabury-Western Theological Seminary, Evanston, 81, 11
University of Chicago Divinity School, Chicago, 230, 73

INDIANA

Butler University School of Religion, Indianapolis, 264, 0

IOWA

University of Dubuque Theological School, Dubuque, 71, 3
Wartburg Theological Seminary, Dubuque, 175, 0

KENTUCKY

College of the Bible, Lexington, 106, 0
Louisville Presbyterian Theological Seminary, Louisville, 115, 22
Southern Baptist Theological Seminary, Louisville, 952, 154

LOUISIANA

New Orleans Baptist Theological Seminary, New Orleans, 409, 58,

MARYLAND

Westminster Theological Seminary, Westminster, 144, 3

MASSACHUSETTS

Andover-Newton Theological School, Newton Centre, 183, 14
Boston University School of Theology, Boston, 312, 51
Episcopal Theological School, Cambridge, 96, 0
Harvard University Divinity School, Cambridge, 81, 40

MICHIGAN

Calvin Theological Seminary, Grand Rapids, 89, 0
Western Theological Seminary, Holland, 96, 0

MINNESOTA

Luther Theological Seminary, St. Paul, 388, 3
Northwestern Lutheran Theological Seminary, Minneapolis, 75, 0

MISSOURI

Eden Theological Seminary, Webster Groves, 131, 0

NEW JERSEY

Drew Theological Seminary, Madison, 278, 91
New Brunswick Theological Seminary, New Brunswick, 51, 0
Princeton Theological Seminary, Princeton, 333, 91

NEW YORK

Colgate-Rochester Divinity School, Rochester, 84, 0
General Theological Seminary, New York, 179, 28
Union Theological Seminary, New York, 232, 193

North Carolina

Duke University Divinity School, Durham, 198, 0

Ohio

Bexley Hall, The Divinity School of Kenyon College, Gambier, 59, 0
Bonebrake Theological Seminary, Dayton,[9] 188, 0
Evangelical Lutheran Theological Seminary, Capital University, Columbus, 155, 0
Hamma Divinity School, Springfield, 93, 0
Oberlin College Graduate School of Theology, Oberlin, 142, 0

Oklahoma

Phillips University, College of the Bible, Enid, 239, 112

Pennsylvania

Crozer Theological Seminary, Chester, 67, 0
Evangelical School of Theology, Reading,[10] 39, 0
Lutheran Theological Seminary, Gettysburg, 132, 24
Lutheran Theological Seminary of Philadelphia, Philadelphia, 148, 60
Moravian Theological Seminary, Bethlehem, 20, 0
Pittsburgh-Xenia Theological Seminary, Pittsburgh, 160, 22
Temple University School of Theology, Philadelphia, 110, 139
Theological Seminary of the Evangelical and Reformed Church in the United States, Lancaster, 89, 0
Western Theological Seminary, Pittsburgh, 123, 9

South Carolina

Lutheran Theological Southern Seminary, Columbia, 71, 0

Tennessee

Vanderbilt University School of Religion, Nashville, 118, 30

Texas

Austin Presbyterian Theological Seminary, Austin, 103, 29
Brite College of the Bible, Fort Worth, 45, 0
Perkins School of Theology, Southern Methodist University, Dallas, 381, 0
Southwestern Baptist Theological Seminary, Fort Worth, 1,001, 59

Virginia

Protestant Episcopal Theological Seminary, Alexandria, 182, 1
Union Theological Seminary, Richmond, 199, 4

Total enrollment:	
In courses leading to the first professional degree:	
Men	11,877
Women	545
Total	12,422
In courses leading to advanced degrees	1,743
Grand total	14,165

In addition to the 70 schools of theology named above, a total of 79 institutions, variously designated, report instruction in theology, many of them not requiring a college degree for admission. The total enrollment in the fall of 1953 was:

Number in courses leading to bachelor's and first professional degrees:	
Men	5,897
Women	586
Total	6,483
Number in courses leading to advanced degrees	267
Grand total	6,750

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Yearbook of American Churches, 1952 edition, edited by Benson Y. Landis. New York, National Council of the Churches of Christ in the U. S. A., 1952. 290 p.

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[9] United with the Evangelical School of Theology, Reading, Pa., July 1, 1954, to form the United Theological Seminary, Dayton, Ohio.

[10] United with Bonebrake Theological Seminary, Dayton, Ohio, July 1, 1954, to form the United Theological Seminary, Dayton, Ohio.

30. Theological Education: Roman Catholic

By THE RIGHT REVEREND MONSIGNOR JAMES E. O'CONNELL[*]

ROMAN CATHOLIC theological education may be described as the formal and systematic teaching and study of the truths revealed by God. Its formal and systematic approach to revealed truth distinguishes it from religious education which generally is concerned more with the immediate and practical relevance of revealed truth to man's duty to know, love, and serve his Creator.

Roman Catholic theology has several branches: *dogmatic*, dealing with such great truths as the Trinity, the Incarnation of the Son of God, Original Sin, Redemption through Jesus Christ; *sacramental*, the institution, efficacy, and necessity of the sacraments; *ascetical*, God's revealed directions for a life of holiness and perfection; *moral*, God's laws governing good and evil and their application to human conduct; *pastoral*, the priest's care of souls in the active ministry. In a broad sense theological education also includes apologetics, dealing with the reasonableness of revelation; sacred scripture and its exegesis; canon law, the rules governing church administration; liturgy, the study of the Church's official acts of worship.

In Europe many of the large universities offer courses in theology to both clergy and laity, and it is not unusual for a lay person to be awarded a degree in Catholic theology. In the United States theological education is restricted almost exclusively to seminaries and other institutions for the training of the clergy; all Catholic schools, however, give courses in religious education or applied theology. A few American Catholic colleges are now experimenting with courses in theology for the laity.

The rest of this paper will be concerned with theological education as it applies to the priesthood of the Roman Catholic Church.

Roman Catholic Clergy in the United States

In the United States 44,685 Catholic clergy (4 Cardinals, 27 Archbishops, 157 Bishops, 38 Abbots, and 44,459 priests) care for the spirtual needs of 29,407,420 Catholics in 15,653 parishes and approximately 6,500 "subparishes" called missions or stations. These clergymen are ordained priests who have successfully completed the theological courses required by Church law and have been assigned to their parish posts or teaching positions by a bishop or superior of a religious order or community.

The Function of the Priest

A Roman Catholic priest has four main duties: (1) to acquire, through prayer, study, and the imitation of Christ, personal holiness, stability of character, and a thorough understanding of God's revealed truths; (2) to lead the people in official worship and prayer mainly by offering the Sacrifice of the Mass; (3) to care for the spiritual needs of the people entrusted to his care by administering the Sacraments, for example, Baptism, Holy Eucharist, and by helping them solve their spiritual problems through prudent counsel based on sound theological principles; (4) to teach God's truths to the people and to help in establishing God's kingdom on earth.

Although all priests have essentially the same powers acquired through ordination by a bishop, they are classified in two main categories by reason of their way of life and the type of work to which they are assigned. Diocesan priests (sometimes called secular priests) generally work as individuals in the parishes assigned by the Bishop of the Diocese to which they are attached. Priests who are members of religious orders or communities, for example, Jesuits, Dominicans, Franciscans (sometimes called religious priests), generally work as members of a community in specialized fields, like teaching or missionary activities, assigned to them by the superiors of the orders or communities to which they belong. Diocesan priests who are pastors have jurisdiction in their own right, receive a regular salary, and make many decisions of their own. Religious priests generally do not have any personal jurisdiction, are vowed to obey their superiors, receive no stipulated salary, and function not as individuals but as members of a community team. The variations in the theological training of diocesan and religious priests reflect the differences in the type of work expected of them as priests.

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Excellent publications such as *Theological Studies*, *Homiletic and Pastoral Review*, the *American Ecclesiastical Review*, *Theology Digest*, *Emmanuel and Worship*, and many others keep the present-day priest well-informed on theological matters.

Institutional Variations in Theological Education

In the United States students for the priesthood receive their theological training in seminaries and similar institutions. Although all these schools have the same basic program, they differ slightly as the following descriptions indicate: *Minor seminary*—generally for students for the diocesan priesthood; curriculum is high school classical course with emphasis on religion and Latin; sometimes offers a 6-year program including first 2 years of college. *Major seminary*—generally for students for diocesan priesthood, 6-year course in philosophy and theology. *Novitiate*—for applicants for membership in religious order or community; 1- or 2-year period of intensive spiritual training and introduction to community life. *Scholasticate*—for students of religious orders and communities; curriculum generally includes college course with a major in philosophy. *House of Studies*—either a major seminary for students for the religious priesthood or a place of residence for such students taking courses at a university. *Monastery*—frequently includes both a place of residence for priests and a seminary for theological training of students for religious priesthood.

Historical Development of Seminaries

The system of seminary education of the Roman Catholic Church had its origin in a decree of the Council of Trent in 1563, but this origin was preceded by a long development in European countries in which schools of various kinds and universities were employed to train priests. The decree has remained the fundamental law of the church on the education of priests.[1] In substance it is: (1) Every diocese is bound to support, to rear in piety, and to train in ecclesiastical discipline a certain number of youths, in a college to be chosen by the bishop for that purpose. (2) In these institutions are to be received boys who are at least 12 years of age, can read and write passably, and by their good disposition give hope that they will persevere in the service of the church; children of the poor are to be preferred. (3) Besides the elements of a liberal education, the students are to be given professional knowledge to enable them to preach, to conduct divine worship, and to administer the sacraments. (4) Seminaries are to be supported by a tax on the income of bishoprics, chapters, abbeys, and other benefices. (5) In the government of the seminary, the bishop is to be assisted by two commissions of priests, one for spiritual, the other for temporal matters.

Following the Council of Trent, St. Charles Borromeo, Cardinal Archbishop of Milan, drew up a set of regulations which have been the model for all seminaries since that day. From time to time additions have been made in the curriculums as changing conditions demanded. These changing conditions have not affected fundamental theological training but rather reflect such circumstances as changes in industrial-labor relations, communism, and so forth.

The United States did not have a seminary until the time of Bishop Carroll. After John Carroll was appointed Bishop of Baltimore, one of his first cares was to provide for the training of a native clergy. At the time of his episcopal consecration in England, he obtained a generous gift for his future seminary and also received an offer from the Sulpician Fathers to send some of the members of their society to establish a seminary in Baltimore. In 1791 Father Nagot with three other Sulpicians and four students arrived at Baltimore to open St. Mary's Seminary. The first priest was ordained 2 years later. Other foundations began shortly afterward as new dioceses were created. As a rule, these early seminaries were begun in or near the bishop's house, and often he was the chief instructor. The more advanced students helped to instruct others, and all took part in the liturgical services at the cathedral.

Thus theological education in the early days of this country was individual and practical. It is obvious that intellectual training was somewhat deficient, but priestly character was molded by daily contact with self-sacrificing pioneer bishops and priests. These institutions served their purpose very well, but as better educational facilities came into being, these imperfectly organized seminaries ceased to exist, although a few were transformed into modern institutions.

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[1] "Seminary," *Catholic Encyclopedia*, Gilmary Society, New York, 1912 (originally published by Robert Appleton Co., New York, 1912), vol. XIII, p. 695-703.

Each Pope since Trent has given both counsel and instruction on the training of the clergy, and these have all been incorporated in present seminary life. Leo XIII and Pius X, in their letters to bishops in various parts of the world and in their decrees regarding seminaries, insist that ecclesiastical studies be in harmony with the needs of our times, but free from all dangerous novelties, especially from the errors condemned under the name of Modernism. Various means have been taken to secure the perfect orthodoxy of both the professors and the students. The Apostolic Constitution of Pope Pius XI of May 24, 1931, carefully laid down a course of studies for the various degrees that are given in the fields of theology, canon law, and philosophy. This Apostolic Constitution, which is known as the *Deus Scientiarum Dominus*, is the standard curriculum for all seminaries throughout the world.

More recently the present Holy Father, Pope Pius XII, in three encyclical letters has given those charged with the administration of seminaries and the guidance of theological education sure and positive counsel. In his letter known as the *Mediator Dei* (Nov. 20, 1947), the sacred liturgy and Gregorian chant have received greater emphasis. The encyclical *Humani Generis* (Aug. 12, 1950) upholds the importance of scholastic philosophy. The encyclical *Menti Nostrae* (Sept. 23, 1950) details the application of theological education to the formation of an energetic clergy.

Since 1904 the National Catholic Educational Association has had a seminary department where papers on seminary training as well as theological papers have been discussed. This department meets annually and has been of great value in raising the standards of theological education. One of the greatest advances in recent years was the founding of the Catholic Theological Society of America, June 25, 1946.

Accreditation

The Sacred Congregation of Seminaries and Universities in Rome has established administrative and scholastic standards with which all seminaries must comply. The congregation requires seminary rectors to submit annual reports about their faculties and other scholastic matters. It also sends inspectors to make reports on seminary training.

Some seminaries in the United States are accredited by regional accrediting associations or by State departments of education. Sometimes this accrediting arrangement is effected through t affiliation of seminaries with accredited universiti

Institutions and Enrollments

There are now in the United States a total of 1 major and about 160 minor Roman Catholic the logical seminaries. The enrollments in recent ye are shown in table 68.

Table 68.—Enrollments in Roman Catholic theological semina in stated years

Year	Number of seminaries	Students for religious orders	Students for diocesan clergy	Lay students	Tot
	Major seminaries				
1924	79	2,020	3,075	--------	5,0
1934	88	3,222	4,578	--------	7,8
1945	124	4,211	5,155	--------	9,3
1950	113,	3,311	6,115	--------	9,4
	Minor seminaries				
1924	91	4,158	4,731	--------	8,8
1934	81	3,555	5,174	1,393	10,1
1945	114	4,126	7,054	1,424	12,6
1950	160	7,445	8,312	1,139	16,8

Admission Requirements

Admission requirements at major seminaries ar generally the same with but minor variations. Fo the school of philosophy one must have completed a least 2 years of college with both college and hig school work being in the field of liberal arts. Emphasis is placed on the mastery of Latin. For entranc into the 4 years of theological training it is necessar that a student have completed a full course o philosophy for a period of not less than 2 years.

Seminary Curriculum and Training

In the minor seminary program, the aspirant to the priesthood follows the ordinary academic an collegiate course for 6 years; he studies Christian doctrine, Latin and Greek, English and at least one other modern language, rhetoric and elocution, history and geography, mathematics and natural sciences, Gregorian chant, and bookkeeping.

Catholic colleges with a course of 8 years, 4 years academic and 4 years collegiate, teach philosophy and science in the junior and senior years, but as a rule this is not accepted by seminaries as the equivalent of 2 years of philosophy. The Council of Baltimore requires ecclesiastical students to spend 6 years in the major seminary. There they receive a special moral training which cannot be given in a mixed college, and they are taught philosophy with a view to the study of theology.

In the theological seminary, 2 years are devoted to the study of philosophy, scripture, church history and natural sciences in their relation to religion. During the last 4 years, the course of study includes holy scripture, apologetics, dogmatic, moral and pastoral theology, church history, liturgy, and canon law. The courses given in these various branches have a twofold purpose: to equip every student with the knowledge necessary for the discharge of the ordinary functions of the ministry; and to give brighter students the foundation of more scientific work, to be pursued in a university. The 4 years of theology are based on the *Summa Theologica* of Thomas Aquinas. The seminary trains general practitioners, the university forms specialists; the seminary gives the element of all ecclesiastical study, the university a treatment of some special questions.

The vast majority of the clergy in nearly all countries receive their education in seminaries, and only at the end of the regular course are some of the best gifted sent to a Catholic university to pursue higher studies, which lead to the degrees of licentiate and doctor in sacred theology.

Most postgraduate work in theology is taken either at Catholic University of America or at the ecclesiastical universities in Rome.

Major Problems

These, in brief, are a few of the problems in Roman Catholic theological education. (1) A perfect balance between speculative and applied theology must be maintained lest the American penchant for the practical undermine the fundamental theological principles on which the whole structure of pastoral ministration must rest. (2) The spiritual formation of the student's priestly character must be intensified so he will be able to cope with the ever-increasing number of worldly distractions that interfere with the peace and reflection needed for effective prayer. (3) Steps must be taken to secure full accreditation for seminaries from regional accrediting associations so their graduates may be qualified to teach in Catholic high schools. (4) Increased attention must be given to the communication arts so priests may preach and write effectively. (5) Plans must be devised to give students more opportunity for "apprentice-type" experience in the pastoral ministry.

Roman Catholic Major Seminaries[1] and 1951–52 Enrollments

The following list contains the names of 119 major seminaries and their 1951–52 enrollments.

ALABAMA

St. Bernard Abbey, St. Bernard, 9

ARKANSAS

New Subiaco Abbey Seminary, Subiaco, 28
St. John's Home Mission Seminary, Little Rock, 150

CALIFORNIA

Alma College, Los Gatos, 105
Dominguez Seminary, Compton, 70
Immaculate Heart Seminary, El Cajon, 52
Salesian College, Aptos, 17
St. John's Seminary, Camarillo, 120
St. Patrick's Seminary, Menlo Park, 146
Santa Barbara Franciscan Theological Seminary, Old Mission, 42

COLORADO

Holy Cross Seminary, Canon City, 5
St. Thomas Seminary, Denver, 158

CONNECTICUT

St. Mary's Seminary, Norwalk, 66

DISTRICT OF COLUMBIA

Atonement Seminary of the Holy Ghost, Washington, 20
Augustinian College, Washington, 76
Capuchin College, Washington, 29
College of Our Lady of Mt. Carmel, Washington, 19
Dominican House of Studies, Washington, 39
Holy Cross College, Washington, 65
Holy Name College, Washington, 112
Marist College, Brookland, 28
Oblate Scholasticate, Washington, 57
Sacred Heart Seminary, Washington, 20
St. Joseph's Seminary, Washington, 44
St. Paul's College, Washington, 60
Theological College of Catholic University of America, Washington, 162
Whitefriars Hall, Washington, 50

FLORIDA

St. Leo Abbey, St. Leo, 6

GEORGIA

Seminary of Our Lady of the Holy Ghost, Conyers, 24

ILLINOIS

Immaculate Conception Retreat, Chicago, 8
Marian Hills Seminary, Clarendon Hills, 13
Our Lady of the Forest, Lake Bluff, 27
Sacred Heart Seminary, Melrose Park, 15
St. Bede Seminary, Peru, 24
St. Joseph Seminary, Teutopolis, 41

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[1] Includes seminaries whose students pursue courses at universities.

Saint Mary of the Lake Seminary, Mundelein, 386
St. Mary's Mission Seminary, Techny, 102
St. Mary's Seminary, Lemont, 8
St. Procopius Seminary, Lisle, 62

INDIANA

Holy Family Monastery, Oldenburg, 44
Our Lady of Lourdes Seminary, Cedar Lake, 28
St. Meinrad Major Seminary, St. Meinrad, 267
West Baden College, West Baden Springs, 194

IOWA

Mount St. Bernard Seminary, Dubuque, 46
Studium Generale of St. Thomas Aquinas, Dubuque, 44

KANSAS

St. Benedict's Theological Seminary, Atchison, 58
Saint Mary's College, Saint Marys, 140

KENTUCKY

Our Lady of Gethsemani Seminary, Trappist, 34

LOUISIANA

Notre Dame Seminary, New Orleans, 89

MARYLAND

De Sales Hall, Hyattsville, 35
Holy Trinity Missionary Cenacle, Silver Spring, 46
Mt. St. Mary's Seminary, Emmitsburg, 114
St. Mary's Seminary, Baltimore, 642
Willowbrook Seminary (St. John Eudes), Hyattsville, 3
Woodstock College, Woodstock, 251

MASSACHUSETTS

Lady of Sorrows Monastery, West Springfield, 6
La Salette Seminary, Attleboro, 22
La Salette Seminary, Ipswich, 49
Marist College and Seminary, Framingham, 58
Oblate College and Seminary, Natick, 32
St. Hyacinth Seminary, Granby, 14
St. John's Seminary, Brighton, 368
Saint Joseph's Abbey, Spencer, 34
Weston College of the Holy Spirit, Weston, 195

MICHIGAN

SS. Cyril & Methodius Seminary, Orchard Lake, 191
St. Benedict's Seminary, Brighton, 4
St. John's Provincial Seminary, Plymouth, 192

MINNESOTA

St. Paul Seminary, St. Paul, 352
School of Divinity, St. John's University, Collegeville, 156

MISSISSIPPI

St. Augustine's Seminary, Bay St. Louis, 21

MISSOURI

Conception Seminary, Conception, 147
St. John Cantius Seminary, St. Louis, 28
St. Louis Roman Catholic (Kenrick) Seminary, St. Louis, 249
St. Mary's Seminary, Perryville, 67

NEBRASKA

Immaculate Conception Monastery, Hastings, 14
St. Columban's Seminary, St. Columbans, 56

NEW JERSEY

Immaculate Conception Seminary, Darlington, Ramsey P. O, 291
St. Mary's Monastery, Morristown, 18
St. Michael's Monastery, Union City, 102[3]

NEW MEXICO

Montezuma Seminary, Montezuma, 333

NEW YORK

Christ the King Seminary, St. Bonaventure, 221
Immaculate Conception Monastery, Jamaica, 24
Mary Immaculate Seminary, Garrison, 44
Maryknoll Seminary, Maryknoll, 198
Mount Saint Alphonsus Seminary, Esopus, 97
Mt. Alvernia Seminary, Wappingers Falls, 31
Seminary of Our Lady of Angels, Niagara University, 128
Seminary of the Immaculate Conception, Huntington, 227
St. Anthony-on-Hudson Seminary, Rensselaer, 45
St. Bernard's Seminary, Rochester, 250
St. Joseph's Seminary, Yonkers, 287
Tagaste Seminary, Suffern, 8

NORTH CAROLINA

Belmont Abbey Seminary, Belmont, 7

NORTH DAKOTA

Assumption Abbey Seminary, Richardton, 10

OHIO

Glenmary Seminary, Glendale, 20
Mt. St. Mary's of the West, Norwood, 270
Pontifical College Josephinum, Worthington, 111
Sacred Heart Seminary, Shelby, 32
St. Charles Seminary, Carthagena, 87
St. Joseph Seminary, Cleveland, 32
Saint Mary's Seminary, Cleveland, 132
Saint Paul Seminary, Canfield, 6

OREGON

Mt. Angel Seminary, St. Benedict, 42

PENNSYLVANIA

Mary Immaculate Seminary, Northampton, 52
St. Charles Seminary, Philadelphia, 230
St. Francis Seminary, Loretto, 80
St. Vincent Seminary, Latrobe, 185

TEXAS

Assumption of the Blessed Virgin Mary Seminary, San Antonio, 86
De Mazenod Scholasticate, San Antonio, 72
Roger Bacon College, El Paso, 25
St. John's Seminary, San Antonio, 81
Saint Mary's Seminary, La Porte, 85
Scotus College, Hebbronville, 6

VERMONT

St. Mary's Seminary, Randolph, 10

WASHINGTON

St. Edward's Seminary, Kenmore, 100

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[3] Includes statistics for St. Joseph Passionist Monastery, Baltimore, Md., and St. Ann's Passionist Monastery, Scranton, Pa.

WISCONSIN
- Immaculate Conception Seminary, Oconomowoc, 67
- St. Anthony Seminary, Marathon, 59
- St. Francis Major Seminary, Milwaukee, 233
- St. Norbert Seminary, West de Pere, 49

Total enrollment, 11,128

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Roche, Aloysius. *Mystery Man: The Catholic Priest Explained.* London, Eng., Burns, 1950. 264 p.

31. Education in Veterinary Medicine

By WILLIAM A. HAGAN*

THE MAJORITY of the early veterinarians in the United States acquired what knowledge they had in the school of hard knocks, or from preceptors who, in most cases, had been trained in the same way. Soon after the middle of the 19th century, schools were established for veterinarians. During the last 50 years great strides have been made in the education of veterinarians as science entered the curriculum and most of the hocus-pocus and mysticism of many oldtime "horse doctors" was discarded.

The Veterinary Profession in the United States

Some of the great national veterinary schools of Europe are now nearly 200 years old. From some of these a handful of graduates came to this country early in the 19th century, most of them settling in the large cities of the eastern seaboard. With few exceptions rural communities continued to get along without veterinary services, or with such service as could be obtained from the untrained "horse doctors" and "cow doctors."

For many years the principal activity of veterinarians was to deal with horse diseases. Little attention was given to other species until after the turn of the century. As horses were gradually replaced by automotive power, the profession was forced to turn its attention, more and more, to diseases of other animals. Today the general practitioner deals with horses, cattle, swine, sheep, dogs, cats, poultry, and with wild animals held in captivity.

There are specialists who devote all, or nearly all, their time to a single species, or even to special problems within a single species, as, for example, the specialist in the breeding diseases of cattle. The largest single group of specialists are the small-animal practitioners who cater exclusively to the household pets. The general practitioners, however, outnumber the specialists by at least 3 to 1.

It is estimated that 65 percent of all veterinarians are in private practice. Of the salaried veterinarians, the largest single group consists of those employed by the U. S. Department of Agriculture. At present this group numbers about 1,340, of whom 670 are in the meat-inspection service. The others are engaged in a variety of activities, those in disease control, quarantine service, and research being the principal groups. The Public Health Service has a Veterinary Section in which a number of veterinarians are employed in work relating to the human diseases which have their reservoir in animals. The Food and Drug Administration has a small veterinary staff. The Army and Air Force have Veterinary Services, with approximately 500 veterinary officers in the former and 260 in the latter. The principal duties of veterinary officers are to inspect all meat and meat-food products, milk and dairy products, poultry and eggs, and seafood purchased by the services for the subsistence of troops and certify to their safety and wholesomeness.

Every State has a chief veterinary officer and usually a staff of veterinarians to investigate outbreaks of animal diseases and to administer laws having to do with animal-disease control. Some States have district or county veterinarians with similar duties. Most of the larger cities have full-time veterinary officials, generally attached to the health departments. Many veterinarians are employed by industry—by meatpacking companies, by large livestock companies, and by pharmacological and biological manufacturing companies. All of the large zoological parks have veterinary staffs. Many of the medical schools and medical research institutions now employ veterinarians to supervise the breeding, care, and handling of experimental animals, and, of course, all of the veterinary schools are largely staffed by veterinarians. The range encompassed by veterinary medicine now is far greater than it was only a few years ago.

The 1954 Directory of the American Veterinary Medical Association shows 16,665 veterinarians in the United States and Territories. This is about

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3,000 more than the United States census figures for 1950. The five States with the largest number of veterinarians are: California, 1,356; New York, 1,162; Iowa, 1,009; Illinois, 1,009; and Ohio, 963.

According to United States census figures, after a rapid rise in numbers beginning about 1880, a peak of 13,494 was reached in 1920. This was followed by a substantial decline to 10,957 in 1940 and then a rise by 1950 to 13,489—the level that had been attained at the peak 30 years earlier. Actually the low point was about 1935. The decrease in numbers during the 15-year period after 1920 undoubtedly was largely due to the pessimism about its future which then pervaded the profession.

The adjustments which had to be made to meet the changed conditions caused by the replacement of the horse by motor power were not easy, and many in the profession were discouraged. This attitude was reflected in a low registration in all veterinary schools. The low output of new members of the profession during this time accounts, in part at least, for the present shortage of veterinarians. The country now needs more practitioners, especially to deal with the diseases of farm livestock. Many salaried positions are unfilled because applicants cannot be found. There is much difference of opinion on how many veterinarians are needed in this country, but all agree that the present supply is far from adequate.

Professional Organizations and Periodicals

The veterinary profession is organized into citywide, countywide, statewide, and nationwide groups. The national organization is the American Veterinary Medical Association (AVMA), which has about 12,000 members. Membership in the national organization is contingent upon membership in one of the State societies, and these, in some cases, accept only members of the local societies. Hence the professional organizations are rather tightly integrated.

The AVMA evolved in 1898 from the United States Veterinary Medical Association, which had been organized in 1863. In the 90 years since it was founded, the association has only once missed holding an annual meeting and that was in the war year 1914. The annual meetings are well attended.

The association wields great influence in the profession. Through various activities it endeavors to improve the efficiency of the veterinary service to the country. It influences education, legislation, and the quality of field service through the enforcement of its code of ethics.

The association publishes two journals—the monthly *Journal of the American Veterinary Medical Association* and the quarterly *American Journal of Veterinary Research*. The first has a circulation of more than 17,000. It presents news of interest to the profession, editorial comments, special articles, some technical articles, and reports of committees and councils on education. The second, with a circulation of about 3,500, is devoted wholly to the publication of original research.

The Research Council of the association manages a fellowship program which aids in the advanced training of promising young veterinarians who wish to make a career of teaching and research. The work of the Council on Education is described later. Numerous additional committees are concerned with other matters of interest to the profession.

Three veterinary journals of national and international interest other than those published by the AVMA are published in the United States. These are *Veterinary Medicine*, *The North American Veterinarian*, and the *Cornell Veterinarian*. The first two are combination news and scientific publications; the last is devoted wholly to scientific articles.

Licensure of Veterinarians

To practice veterinary medicine anywhere in the United States, a veterinarian must hold a license, since all States have licensing laws. The first State to restrict the practice of veterinary medicine was New York in 1886. However, apparently the first detailed veterinary practice act to set minimum educational standards was California in 1893, followed by Ohio in 1894, Maryland, New York, North Dakota, and Virginia in 1895, Minnesota in 1896, and Illinois in 1899. The majority of the practice acts were passed between 1900 and 1910, the last one not until about 1925.

To obtain a license an applicant must be a graduate of an approved veterinary school, and ordinarily he must acquit himself satisfactorily in an examination by a licensing board which is appointed by some official or agency of the State government. In most States these examinations are given only once a year. The successful applicants are given licenses, which generally are renewable annually. Under reciprocal agreements a few States issue licenses without examination to those who have successfully passed an examination in another State.

Evolution of Veterinary Education

The first primitive veterinary schools in the United States were founded by immigrants from Europe. The first school that survived long enough to graduate students appears to have been started in New York City in 1852. From that time until 1927, when the last proprietary school closed its doors, at least 30 proprietary institutions functioned at one time or other.[1] The lives of most of them were short. One, however, the Chicago Veterinary College, lasted for 37 years and graduated nearly 2,400 men—more than any other school has graduated up to the present time.

Table 69.—Enrollments in schools of veterinary medicine, fall term, 1920–53

Year (fall)	Number of schools [1]	Under-graduate students	Graduate students [2]	Special students [3]	Total
1920	11	609	0	5	614
1921	11	551	0	2	553
1922	11	558	0	4	562
1923	11	514	0	5	519
1924	11	503	0	1	504
1925	11	502	0	12	514
1926	11	534	29	10	573
1927	11	633	24	7	664
1928	11	809	22	5	836
1929	11	960	21	10	991
1930	11	1,087	24	11	1,122
1931	11	1,229	30	10	1,269
1932	11	1,214	38	[4] 68	1,320
1933	11	1,184	32	[4] 147	1,363
1934	10	1,346	21	[4] 276	1,643
1935	10	1,564	19	[4] 369	1,952
1936	10	1,659	21	[4] 553	2,233
1937	10	1,876	38	[4] 564	2,478
1938	10	2,027	37	[4] 592	2,656
1939	10	2,112	34	29	2,175
1940	10	2,165	1	12	2,178
1941	10	2,164	33	9	2,206
1942	10	2,128	25	0	2,153
1943	10	2,065	(5)	(5)	2,065
1944	(5)	(5)	(5)	(5)	(5)
1945	(5)	(5)	(5)	(5)	(5)
1946	10	1,725	80	4	1,809
1947	14	2,386	95	3	2,484
1948	17	2,922	87	2	3,011
1949	17	3,565	114	16	3,695
1950	17	3,226	116	6	3,348
1951	17	3,287	139	3	3,429
1952	17	3,324	140	7	3,471
1953	17	3,381	146	10	3,537

[1] Numbers for the years preceding 1947 include only schools approved by the American Veterinary Medical Association.

[2] Denotes a holder of 1 degree in veterinary medicine who is working toward another degree in this field.

[3] Denotes a student at any level not working toward a degree in veterinary medicine.

[4] Includes undergraduate preveterinary students.

[5] Not reported.

Source: Compiled from the *Journal of the American Veterinary Medical Association* and other published materials.

The educational task was gradually taken over by State-supported colleges and universities. As early as 1868 the Illinois Industrial University (which later became the University of Illinois) and Cornell University established courses in veterinary medicine and surgery. This development gained momentum after 1890, but it was not until about 1920 that the publicly supported schools began graduating more students than the private schools. With one exception, veterinary education in the United States has been publicly supported since 1927. All of the present schools, 17 in number, are integral parts of land-grant colleges and universities except the one in the University of Pennsylvania, which is not a land-grant institution but receives a substantial subsidy from the Commonwealth of Pennsylvania, and Tuskegee Institute, which is privately supported.

The total enrollments in schools of veterinary medicine during the past 30 years ranged from 504 in 1924 to 3,695 in 1949. (See table 69.)

Educational Associations

The special problems of veterinary education are dealt with by two associations: the Association of Deans of American Veterinary Colleges, and the Veterinary Division of the Association of Land-Grant Colleges and Universities. The first brings together annually, at the meeting of the AVMA, the administrative officers of all veterinary colleges of the United States and Canada; the second brings together not only all administrative officers of veterinary schools of the United States but also the heads of veterinary departments of those land-grant colleges that do not maintain professional schools.

Accreditation

The American Veterinary Medical Association has had committees concerned with evaluating veterinary schools since before 1900. In 1932, all schools of veterinary medicine in the United States and Canada were notified by the association that during the next two years there would be an accrediting examination of curriculum, faculty, and physical equipment. This program was completed, but the results were not published because of disagreement among members. In 1941, the association issued a revised pamphlet, *Essentials of an Approved Veterinary College*, to replace the 1921 edition. This statement met with wide acceptance, and the AVMA organized a Council on Education in 1946, with the primary function of accrediting schools.

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[1] Another proprietary school was opened in 1938 and continued in operation until 1947. It graduated about 200 students.

The council consists of 9 members: (*a*) Three constitute an executive committee, and they are elected by the executive board of the association for 6-year terms; (*b*) 6 are appointed by the president of the association at the rate of one member a year, each to serve a 6-year term. Election and appointment to membership on the council are limited to certain listed categories of personnel in the veterinary profession.

The council regularly inspects and criticizes the veterinary schools of the United States and Canada. Each year a list of approved schools is published in the *Journal* of the association. All 17 schools in the United States are accredited. Many of the State licensing boards admit to their examinations only graduates of schools approved by the council.

The United States Civil Service Commission admits to its examinations those applicants for civilian veterinary positions who have successfully completed a full course of study in an accredited school of veterinary medicine; or a full course of study in a nonaccredited school of veterinary medicine in the United States plus 5 years of postgraduate professional veterinary experience which gives the applicant a technical knowledge comparable to that he would have acquired through successful completion of a full course of study in an accredited school of veterinary medicine. A list of approved veterinary schools is maintained by the Civil Service Commission; it is made up in cooperation with the Department of Agriculture. It includes all existing schools in the United States, 1 in Canada, 21 American schools no longer operating, and 31 present and former institutions in foreign countries. For such accreditation, which started in 1906, the United States Department of Agriculture has a committee of five veterinarians who visit the schools regularly and issue the official reports through a secretary. Foreign schools are evaluated by means of mailed questionnaires, personal knowledge of veterinarians in America, and statements of the agricultural attachés of the countries where the schools are located.

Admission Requirements of Veterinary Schools

The earlier veterinary schools of the proprietary type had practically no admission requirements except the ability to read and write. Some required a common school education. Later many of the schools required 2 years of high-school work and finally a high-school graduation certificate. Many of the proprietary schools did not attain this level until near the end of their period of existence. The publicly supported schools, from the beginning, generally required a high-school graduation certificate. Between 1931 and 1935 all veterinary schools began to require 1 year of general college work for admission. Later some increased it to 2 years, and by 1949 all schools were on this basis. This is the situation at present. A substantial number of veterinary students obtain bachelor's degrees before they undertake professional education.

The pattern of the requirements within the two college preveterinary years differs somewhat in different institutions. All require at least 12 semester credit hours in chemistry, including at least one course in organic chemistry, at least 6 hours of physics, at least 6 hours of zoology (biology accepted in some cases) and at least 6 hours of English. Some have additional course requirements. All regard 60 semester or 90 quarter credit hours as the minimum total required.

All veterinary college admission boards recognize the importance of a good practical training of their applicants in the care and handling of livestock. Some have specific farm practice requirements; others do not define the requirement but take it into consideration when deciding between applicants.

Professional Curriculum and Degree

The early 2-year course gradually gave way to a 3-year curriculum, and this in turn to one of 4 years, which is standard for today. All schools adopted the 4-year program about 1915.

The curriculums of the schools differ from one another in content and in sequence of subjects. The first year is devoted largely to gross and microscopic anatomy of the common domesticated species of animals. This is followed by the other basic subjects which enable the student to understand the working of the organs and tissues, the external disease-producing agents such as bacteria, fungi, protozoa, and helminthic parasites, and the reactions of the tissues to chemical agents or drugs. Clinical work generally is started during the third year and is continued throughout the fourth year. Several of the schools have compressed the didactic curriculum into the first 3 years and are using the fourth year almost entirely for clinical work.

All the veterinary schools in this country confer the degree doctor of veterinary medicine (D. V. M.)[3] when the professional curriculum has been completed. It has already been pointed out that this degree does not, of itself, entitle the holder to the right to practice, since he must in addition obtain a license in the State in which he works. Some colleges and universities with veterinary schools confer the bachelor of science degree on students who have completed 2 years of the veterinary curriculum, since at this time they have completed 4 years of college work.

Graduate and Postgraduate Education

All veterinary schools today are parts of larger colleges or universities which have graduate schools. Graduates in veterinary medicine generally are eligible for admission to these schools. In some, only the master of science degree may be earned; in most, both the master of science and the doctor of philosophy may be earned. Since there are veterinary departments in many agricultural schools, veterinarians often work for advanced degrees in these institutions. A few do their work in medical and other specialized institutions.

Most of those who seek advanced degrees plan to teach and carry on research as a career. Those who are primarily interested in private practice usually do not undertake graduate work but often obtain experience in clinical work in institutions or under conditions where registration for graduate work is not possible.

In veterinary medicine there is little opportunity for internship training such as is a part of medical training. This is because there are very few veterinary hospitals with staffs large enough to offer adequate internships. Many students, however, work immediately after graduation for a year or two with established practitioners before they attempt to set up their own practices. Sometimes this arrangement has been called an internship, but actually it is a preceptorship.

All the leading schools of public health admit veterinarians to their classes on the same basis as physicians, sanitary engineers, and others. Veterinarians who seek careers in public health work are advised to take at least 1 year in one of these schools, and qualify for the degree master of public health (M. P. H.).

Most of the veterinary schools and some of the veterinary departments in which professional courses are not taught offer short courses annually for practitioners who wish to improve their knowledge or skill. Some of the local veterinary associations have also sponsored special short courses.

Cost of a Veterinary Education

It is no longer possible to provide a satisfactory education in the veterinary field from the tuition receipts. The cost of educating a veterinarian today cannot be estimated accurately since all veterinary schools have several functions other than teaching, and the costs of teaching cannot be accurately separated from those of research, diagnostic services, and extension activities when all are done by the same persons. Obviously to divide the total budget of any of the colleges by the number of students to find the unit cost of teaching would be misleading. It has been estimated, however, that the average cost in the various schools for the teaching of each student falls between $1,500 and $2,000 per year, or from $6,000 to $8,000 for the complete course. Few students could pay such fees. The difference between what they pay in tuition fees and the real cost has to be made up from endowment earnings or public funds.

Most State veterinary schools offer free tuition to residents of their own States, but charge nonresidents for tuition. Generally, residents and nonresidents alike are subject to the payment of certain fixed fees. A study made in 1952 of the combined tuition and fixed-fee costs in American veterinary colleges showed that residents paid from $80 to $265 a year, and nonresidents from $158 to $680 a year, depending upon the schools attended. Living costs vary widely according to location and to the students' tastes and habits. Few probably would spend as little as $500. The majority probably would spend $1,000 or more.

Veterinary Research

Research on animal diseases is carried on by a number of different agencies. Some privately endowed, such as the Rockefeller Institute for Medical Research, provide funds for research in this field, but by far the greatest support comes from State and Federal Governments. All veterinary college staffs carry on research programs, some rather modest, some rather substantial. The same is true of the staffs of the veterinary departments in colleges of agriculture. Much of the work is done with experiment station funds, which are made up of special-purpose grants from the Federal Government and matching funds from the States. Some States have livestock sanitary boards operating under State government, and these sometimes carry on diagnostic and research programs apart from educational institutions. The research supported by the Federal Government is mostly done through the Department of Agriculture, but some through the Public Health Service. The amount of money spent on animal disease research is not large when it is compared to the value of the livestock industry and the heavy losses from disease that the industry regularly suffers.

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[3] The University of Pennsylvania uses the form "V. M. D."

Regional Plans for Veterinary Education

It has been pointed out that veterinary education in this country is largely State supported. Since there are schools in only one-third of the States, efforts have been made to permit those States without schools to send a limited number of students to those of neighboring States, and to pay a fee for the privilege. The first of these arrangements was developed through the Southern Regional Educational Compact, which began operating in 1949. This arrangement involves 13 States, of which only 4 have veterinary schools (Alabama, Georgia, Oklahoma, and Texas). There are, in fact, two schools in Alabama, one being the only veterinary school operated exclusively for Negroes (Tuskegee Institute). The other 9 States (Maryland, Virginia, North Carolina, South Carolina, Florida, Tennessee, Kentucky, Mississippi, and Louisiana) in the compact have arrangements by which quotas may be sent to the veterinary schools in the region. A payment of $1,000 per student per year is made to the institution receiving them. All Negro students go to Tuskegee Institute; white students to the University of Georgia, the Alabama Polytechnic Institute, the Oklahoma Agricultural and Mechanical College, or the Texas Agricultural and Mechanical College, according to a definite plan.

The second plan of this kind is operated by the Western Interstate Commission for Higher Education. It became operative in 1953. The participating States are Arizona, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, and Wyoming. The only veterinary school in this group of States is that of the Colorado Agricultural and Mechanical College. The States, other than Colorado, pay $1,200 per year per student sent to this school.

Veterinary Schools and Enrollments

The schools of veterinary medicine are listed below. The first figure indicates the undergraduate enrollment and the second indicates the graduate enrollment in the fall of 1953, as reported in the December 1953 issue of the *Journal of the American Veterinary Medical Association.*

ALABAMA

Alabama Polytechnic Institute, School of Veterinary Medicine, 252, 2

Tuskegee Institute, School of Veterinary Medicine, 59, 0

CALIFORNIA

University of California, School of Veterinary Medicine, 202, 4

COLORADO

Colorado Agricultural and Mechanical College, Division of Veterinary Medicine, 241, 12

GEORGIA

University of Georgia, School of Veterinary Medicine, 233, 0

ILLINOIS

University of Illinois, College of Veterinary Medicine, 126, 9

IOWA

Iowa State College, Division of Veterinary Medicine, 251, 20

KANSAS

Kansas State College, School of Veterinary Medicine, 239, 8

MICHIGAN

Michigan State College, School of Veterinary Medicine, 247, 19

MINNESOTA

University of Minnesota, School of Veterinary Medicine, 194, 19

MISSOURI

University of Missouri, School of Veterinary Medicine, 120, 0

NEW YORK

State University of New York, Veterinary College, 197, 16

OHIO

Ohio State University, College of Veterinary Medicine, 280, 15

OKLAHOMA

Oklahoma Agricultural and Mechanical College, School of Veterinary Medicine, 141, 2

PENNSYLVANIA

University of Pennsylvania, School of Veterinary Medicine, 198, 3

TEXAS

Agricultural and Mechanical College of Texas, School of Veterinary Medicine, 219, 15

WASHINGTON

State College of Washington, College of Veterinary Medicine, 182, 2

Total:	
Undergraduate	3,381
Graduate	146
Grand total	3,527

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32. Education of Army Officers

By IVAN J. BIRRER*

FOR MANY YEARS an extensive integrated plan for the professional education of the United States Army officer has been in operation. The objective of the plan has been to prepare officers to perform effectively those duties which they may be assigned to in time of war. An outline of this plan follows.

Early in their career young officers are customarily informed that most of their career will be spent in school, either as a student or as a teacher. When the term "school" is used in its general sense, the statement is literally true, for, except when in combat operations, the Army's major task is training—and in a training situation the personnel divides into teachers and students.

The purpose of this chapter, however, is to describe the Army school system, in which the word "school" is used in the sense of an installation where students are congregated to pursue a course of instruction with a full-time faculty.

The Army School System

Now, how big is the school system? The most recent edition of the *Army School Catalog* lists the current schools and courses. A total of 54 geographically separate facilities (schools) are named in it. These 54 schools offer 278 separate courses for officers and an additional 294 courses for enlisted men. The names of some of the facilities are familiar: Command and General Staff College, The Infantry School, The Quartermaster School; other names are relatively unknown: Army Medical Service Graduate School, Psychological Warfare School, Quartermaster Subsistence School. The courses range from the broad 10-month course of the Army War College to the 2-week camouflage course of the Engineer School.

For descriptive purposes this vast school system can be subdivided in several ways. Perhaps the most useful division is into *career courses* and *Military Occupational Specialty* (*MOS*)[1] *courses*. Under the heading of career courses are those that are designed to teach the typical functions of an officer of a particular arm or service and of a particular rank. In contrast, the MOS courses are designed to produce students qualified in a given military specialty. As an example, the 2-week camouflage course qualifies its graduates for the MOS 9511, and this MOS is awarded to students successfully completing the course. Other examples are courses for sales officers, public information officers, and food service supervisors. The great bulk of the separate courses listed in the *Army School Catalog* are MOS courses.

When the Army school system is mentioned it is usually in connection with the so-called career courses. These career courses are the heart of the school system; by means of them the Army imparts to its officer corps the school theory and gives the school practice which, when combined with subsequent on-the-job experience, produces commanders and staff officers. The discussion that follows concerns Regular Army officers. Under heading "associate courses," the education plans for Reserve component officers will be described.

Precommissioned Military Schooling

Since an officer's military schooling begins before he receives his commission, a description of professional education for the profession of arms should include a brief reference to precommissioned schooling. Most of the prospective officers will take their precommissioned military schooling as participants in the reserve officers' training program (ROTC) or as students at the United States Military Academy. A third possibility is the officers' candidate school program for enlisted men who have served in the ranks.

Whether in the ROTC program or at the Military Academy, the lieutenant-to-be pursues a regular college course of instruction leading to a baccalaureate degree. As a part of his college program he receives instruction in military science and tactics. However, instruction in military science and tactics is a very small part of the student's academic program.

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[1] Every kind of job in the military has been assigned a number. When an officer is awarded an MOS it means he is qualified for the duties of the job assigned that number.

If the lieutenant earns his commission by attending an officer candidate school, he will undergo an intensive military training program—a program that at present is 22 weeks in length. During this period the course of study is entirely military.

Branch Schools

The Army of the United States is organized in 16 branches: (1) for the combat arms—armor, artillery, infantry; (2) for the technical and administrative services—Adjutant General's Corps, Army Medical Services, Chaplain's Corps, Chemical Corps, Corps of Engineers, Finance Corps, Judge Advocate General's Corps, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, Transportation Corps, Women's Army Corps. Each branch maintains its own schools.

The officer's full-time military schooling begins after he receives his commission. The extent of this schooling is illustrated by tracing the school career of an infantry lieutenant. Whether the lieutenant earned his commission from the Military Academy or through the ROTC program, his college training, as was noted above, has been primarily academic. In order to function effectively as an infantry lieutenant, he must receive basic instruction in the duties and responsibilities of an officer of infantry. Therefore, one of his first duty assignments will be to attend the infantry officer basic course at The Infantry School, Fort Benning, Ga. In the words of the *Army School Catalog*, this course has the following purpose: "To provide basic branch training for the newly commissioned officers so that they will have a working knowledge of the duties and responsibilities appropriate to their rank and expected service."

For 11 weeks an officer pursues a course of instruction in such things as small arms, technique of rifle fire, signal communication, map and aerial photograph reading. Upon successful completion of the course, the graduate is presumed to have had the necessary training to enable him to perform effectively as an infantry lieutenant. He will need practical experience in what he has learned and further study of many of the subjects, but this condition holds throughout the school system. As will be noted, each school tour is customarily followed by an assignment in which the school learnings will be used. From both the purpose (in Army terminology, the mission) of the course and the indicated scope of the curriculum in the course, it can be seen that the infantry officer basic course is concerned with duties of newly commissioned infantry lieutenants in general rather than the specific skills or techniques of a military speciality.

Infantry Company Officer Basic Course.—After the lieutenant has completed 2 years of service and before he finishes his fifth year he will return to Fort Benning, Ga., to attend the infantry company officer course. For approximately 4 months he will receive training in the duties and responsibilities of company grade (lieutenants and captains) officers assigned to companies and battalion staffs. The course, which is much broader in scope than the basic officer course, includes such subjects as platoon and company tactics, air transportability, duties of battalion staff, medical field subjects.

Infantry Officer Advanced Course.—Upon graduation from the infantry company officer course and upon completion of 5 years of service, the infantry officer becomes eligible to attend the infantry officer advanced course. Between his 5th and 12th year of service, usually between the ages of 27 and 34, he will return a third time to The Infantry School. At this point of his service he may be expected to hold the grade of captain or perhaps that of major. The 36-week advanced course is "designed to provide advanced branch training to officers so that they are thoroughly grounded in the duties and responsibilities appropriate to field grade infantry officers." Since field grade infantry officers hold such positions as commanders and staff officers of battalions and regiments, the course is concerned with the skills, procedures, techniques, and problems incidental to such positions and the employment of regimental combat teams. When the student completes this half-year of intensive schooling, it is presumed that he has the school foundation for the infantry assignments he may one day receive. Here again there is no attempt to teach a specific job but rather the broad gamut of duties and responsibilities the officer will encounter in his career. All infantry officers attend the basic, company, and advanced branch courses. Together these courses are known as branch courses.

Command and General Staff College

In addition to being assigned as a field grade infantry officer in an exclusively infantry unit, during his career the officer will be assigned as a staff officer and as a commander of organizations larger than the infantry regiment—that is, divisions, corps, field armies, and comparable communications zone units. The first institution in the Army school hierarchy to offer this type of schooling was the world-famous Command and General Staff College (CGSC) at Fort Leavenworth, Kans., now in its 73d year.

Approximately half of the graduates of the infantry officer advanced course, and also of the advanced course of service schools of other branches, will be selected to attend the Command and General Staff College. Officers are selected whose records indicate the greatest potentiality for responsible leadership. Each year about 520 United States Army officers are detailed to attend the 41-week regular course of the Staff College. At the time of selection the students have had from 8 to 15 years of service, are in the grade of major or lieutenant colonel, and must not have reached their 41st birthday.

The officers' branch training has been conducted in institutions known as schools. The Fort Leavenworth institution is the first one to which the name "college" rather than "school" has been assigned. The appropriateness of this nomenclature is suggested by the purpose of the Command and General Staff College regular course as stated in the *Army School Catalog:* "Training to prepare officers for duty as commanders and general staff officers for division, corps, and army, and comparable levels in the communication zone." At Leavenworth the student is taught the employment of combined arms team. The Command and General Staff College is the Army's graduate school concerned with "how the Army fights." In general, at Fort Leavenworth the officer receives his terminal education in Army combat operations. When he supplements this education with experience, he is presumed to be qualified professionally to command or act in the capacity of a general staff officer of any ground Army units.

Army War College

Graduation from the Command and General Staff College signifies the final career course for a majority of its graduates. For the minority there remains attendance at an additional educational institution. Within the Army proper there is the Army War College. Under joint jurisdiction of Army, Air Force, and Navy there are three additional institutions: The Industrial College of the Armed Forces, the National War College, at Fort Lesley J. McNair, Washington, D. C.; and the Armed Forces Staff College.

The highest level Army educational institution is the Army War College, which dates from 1904, with a lapse from 1940 to 1950. Until World War II it was situated at Fort Lesley J. McNair, Washington, D. C. It is now permanently established at Carlisle Barracks, Pa.

The mission of the college is to prepare "selected Army officers for duty as commanders and as general staff officers at the highest United States Army levels through courses of instruction not included in Army schools of a lower category." The 200 senior officers, with from 15 to 25 years of service, who attend the 10-month course pursue a curriculum comprising three general fields: (1) national and international affairs; (2) the role of the Army, its mission and responsibilities; (3) strategy and planning.

The Army War College is conducted much like a civilian graduate school. There is a great deal of individual and group research by the students. Lectures, frequently by world-famous authorities (military and civilian), supplement research. The atmosphere of the institution is in keeping with its serious task of providing postgraduate schooling to its highly select student body.

The three joint colleges are described in a later section of this chapter.

Summary of the Training Pattern

The preceding description of the postcommissioned school experiences of a typical infantry officer shows that at the minimum he will have the basic, company, and advanced officer courses. Together these courses comprise about 1 school year. Then about 50 percent of the group attend the Command and General Staff College for an additional school year. Finally, a smaller percentage attend the Army War College or one of the joint colleges, for the third year, coupled, perhaps, with an additional half year at the Armed Forces Staff College.[3] So from the point of view of school experience, the career officer may receive as much as 3½ years of postcommissioned (graduate) schooling in career courses. Such a figure compares very favorably with the amount of graduate training for other professions.

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[3] An Army officer will attend only 1 of the 3 senior colleges—Army War College, National War College, Industrial College of the Armed Forces. Insofar as assignment and promotion are concerned, graduation from the Army War College is considered the same as graduation from the National War College.

A study completed in 1951 that analyzed the careers of 495 Army general officers revealed that these officers had spent an average of 4 years in service schools, exclusive of precommissioning education.[3] One significant difference between the graduate training for the profession of arms and that for civilian professions should be noted: for the professional military man, graduate schooling is interspersed with other tours of duty arranged so that for each educational level he has an opportunity to apply his recently acquired school learnings.

The pattern described for an infantry officer is directly applicable to officers of the other combat arms—armor and artillery. A similar program exists for the officers of other branches of the Army, known collectively as the technical and administrative services. Description of the training of a typical Transportation Corps officer will illustrate the program. Very early in his career the officer will attend the basic course of his branch school, in this case The Transportation School, Fort Eustis, Va. There he acquires a "working knowledge of the duties and responsibilities appropriate to a newly commissioned officer of his rank and expected service."

Then, between his second and fifth years of service, he will attend the Transportation Company officer course for training in the company and battalion level duties and responsibilities of his branch. He will return to The Transportation School for a third tour to attend the Transportation Officer advanced course. Subsequently a selected number of the group who have completed the advanced course will attend the Command and General Staff College, and at a later time a still smaller percentage will go to one (or perhaps two) of the more advanced colleges. For the small group attending the higher level joint colleges, the Transportation Corps quotas differ from the arms quotas in that the bulk of their quota is for the Industrial College of the Armed Forces rather than the National War College. This quota breakdown holds for all arms and services and is a reflection of the different missions of the joint colleges.

Each of the 16 branches of the Army has its own service school: The Ordnance School, The Quartermaster School, The Armored School, etc. In these branch schools and the two Army colleges, career courses are taught.

The curriculums of the branch schools have significant similarities. In each school the courses are designed to teach the duties of officers of that branch. Since the duties of artillery officers differ materially from the duties of finance officers, the curriculums of the two schools are correspondingly different. On the other hand, regardless of branch, all officers of a given grade have many duties in common. This fact has prompted the preparation of a list of "common subjects" which, as the name suggests, are the subjects required in all branch schools. This common "core curriculum" approximates 200 classroom hours for the basic course. For both company and advanced courses, the corresponding number is 400.

The requirement of the "common subjects" insures that each branch school shall include in its curriculum the materials that officers of all branches must know. The "common subjects" scheme serves another purpose of importance to the Command and General Staff College. The curriculum of that college builds upon the "common subjects" prescribed for the branch advanced courses. By means of "common subjects" there is assurance that at matriculation all CGSC students will have a certain minimum of school experience.

Joint Staff Colleges [4]

In an era of total war and mass-destruction weapons, the military security of the Nation is more and more a joint [5] effort. Within the school system of each service the necessity for joint planning and operations is recognized. But despite this recognition, the school system of any service necessarily devotes the bulk of its effort to the problems of that service.

In order to provide sufficiently for joint education and to do so in a setting in which the student body was itself from all services, the Department of Defense established the three joint colleges following World War II.

Armed Forces Staff College.—In the educational hierarchy the lowest ranking joint college is the Armed Forces Staff College (AFSC) at Norfolk, Va. As is true for all three of the joint colleges, its faculty and student body are made up from three services—the Army, the Navy, and the Air Force. The 5-month course is presented twice each year. The Army student body each year approximates 125.

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[3] Richard C. Brown, *Social Attitudes of American Generals, 1898-1940.* Unpublished doctoral dissertation, University of Wisconsin, 1951.

[4] This section was prepared from materials originally compiled on the joint colleges for this chapter and chapters 33 and 34.

[5] The word "joint" involves the three services—the Army, the Navy, and the Air Force. Joint operations are those in which 2 or more services are participating. Similarly, combined operations are those in which the Armed Forces of two or more countries participate.

The AFSC is maintained to educate selected officers of the Armed Forces in joint operations, including the planning thereof, and to provide background for an appreciation of combined operations. The course includes the following areas of study: (1) Characteristics, organization, and employment of Army, Navy, and Air Forces, and the relationship of these forces to each other; (2) joint staff techniques and procedures; (3) trends of new weapons and scientific developments and their effect upon joint operations; (4) the organization, composition, and functions of theater of operations and major task forces, and the responsibilities (strategical, tactical, and logistical) of the commanders thereof; (5) the preparation of plans for amphibious and airborne operations involving the employment of joint forces.

National War College.—At the apex of the joint educational system are the two joint colleges at Fort McNair, Washington, D. C.—the National War College (NWC) and the Industrial College of the Armed Forces (ICAF). Selection to attend one of these institutions is the most highly prized educational assignment an officer may receive. The course of both is 10 months long.

The National War College prepares selected individuals of the Armed Forces and other governmental departments for the exercise of joint high-level policy and command and staff functions and for the performance of strategic planning duties in their respective departments. It promotes the development of understanding of those governmental agencies and those factors of power potential which are an essential part of a national war effort.

The instruction of the National War College includes: (*a*) Analysis of the nature and interdependence of the several factors of national power of the United States and other nations; (*b*) study of the integration of military and foreign policy; (*c*) study of the role of the United Nations and other means designed to avoid armed conflict between nations; (*d*) determination of the influence of the possession or deficiency of economic, scientific, political, and social resources upon the capability of waging war; (*e*) study of the interests and objectives of significant nations in their international relations, areas of disagreement, and measures short of war; and (*f*) study of the military force necessary to implement national policy in peace and war; strategy and war planning, impact of science and technology upon the Armed Forces, departmental and interdepartmental problems which concern the national, security, and employment of joint forces on the joint expeditionary force and higher levels.

The character of the enrollment of the National War College is illustrated by the 1953–54 class, which consisted of 121 students, as follows: Army, 33; Air Force, 32; Navy, 24; Marine Corps, 6; Coast Guard, 1; Department of State, 18; Central Intelligence Agency, 3; Department of Defense, 1; Foreign Operations Administration, 1; Department of Commerce, 1; and United States Information Agency, 1. The last 25 of these were civilians.

Industrial College of the Armed Forces.—The Industrial College of the Armed Forces has a mission and a curriculum closely related to those of the National War College. It too enrolls selected officers from the three services, and civilians from certain Federal agencies also attend. The college prepares officers of the Armed Forces for important command, staff, and planning assignments in the Military Establishment in connection with industrial and manpower mobilization, and it also prepares civilians for important industrial mobilization planning assignments in any Government agency.

The course of study of the college includes (1) all phases of the national economy and the interrelation of economic factors with political, military, and psychological factors; (2) joint logistic planning and its relation to the national policy planning; and (3) peacetime and potential wartime governmental organizations and wartime controls.

The usual enrollment in the college is 135, with quotas assigned as follows: Army, 40; Air Force, 40; Navy, 34; Marine Corps, 6; Coast Guard, 1; Department of Defense, 5; Departments of State, Interior, Commerce, and Labor, 1 each; Atomic Energy Commission, Office of Defense Mobilization, Central Intelligence Agency, National Security Agency, and General Services Administration, 1 each.

Associate Course Program:
Reserve Officer Training

It is an accepted concept of the defense structure that when an emergency occurs there must be available a large nucleus of trained officers. This required nucleus cannot be improvised but must be on hand. This means that it must be produced in time of peace. When this concept is coupled with the traditional policy of a small standing army, it follows that the Reserve components must furnish a significant portion of the trained nucleus. Therefore a major requirement of the Army school system, and of no less importance than educating the Regular officers, is to provide professional education for officers of the Reserve components, either National Guard or United States Army Reserve, and whether on an active- or inactive-duty status. For the most part this requirement is accomplished by means of what are known as associate courses, courses that correspond to the career courses for Regular officers. Each of the branch schools and the Command and General Staff College conduct associate courses.

The associate courses are similar to their corresponding regular courses. They differ in that they are customarily shorter; consequently the scope of the curriculum of an associate course is somewhat narrower. Another difference is that in the associate course a subject in the curriculum is given more cursory coverage. For example, at the Artillery School the regular advanced course is 50 weeks long, and the associate advanced course is 36 weeks long. At the Command and General Staff College the same regular-associate course relationship exists. Paralleling the 10-month regular course is a 4-month associate course primarily for Reserve component officers.

An additional opportunity for school training for the Reserve officer on an inactive duty status is the nationwide network of night schools called United States Army Reserve (USAR) schools. The USAR schools, operated and taught by Reserve officers, parallel the resident instruction in the service schools. The yearly program consists of twenty-four 2-hour night sessions combined with 15-day tours of active duty. Over 200 of the schools are in operation.

The associate and USAR school programs are designed to provide professional education for the non-Regular officer. They are based on a recognition of the fact that in time of war Reserve component officers make up the great bulk of the officer corps. Continual professional growth and development of the non-Regular officers are necessary to national security.

The associate course program provides an additional dividend. There is an ever-increasing requirement for officers to have training in other branches of the Army. As associate courses are shorter, they offer a ready means of satisfying this requirement.

Military Occupational Specialty (MOS) Courses

When they are viewed as to size of operation, either the number of courses or number of students, the military occupational specialty (MOS) courses dwarf the career courses. There are school training programs (courses) for almost all officer functions that are in any way specialized. These courses, as noted earlier, are designed to produce military occupational specialists. Generally they have the flavor of a technical or trade school.

MOS courses are established when it becomes necessary to have available Army personnel with specialized training of some sort, and when that training can be most efficiently accomplished in a formal school surrounding. The Army believes that with each specialty an officer acquires, he becomes more valuable; further, that when the specialty is needed it is highly desirable to have a substantial pool of already trained specialists. With the constantly growing complexity of the modern Army it is not surprising that the number of MOS courses increases. For the foreseeable future this trend is likely to continue.

Extension Courses

In addition to the numerous opportunities for professional education by classroom attendance within the Army school system, there is available to the officer a program of extension courses. (In civilian terminology this program would be labeled correspondence rather than extension.) This program is available to both Regular and civilian component personnel regardless of duty status. It begins with the so-called ten series, which is concerned with precommissioned training. This is followed by five other series of courses, presenting in extension-course form the subjects which are applicable to the mobilization duties of officers in the grades second lieutenant through lieutenant colonel.

Each of the six series is composed of a group of subcourses (subjects). In each subcourse there are a number of individual lessons which the student completes and submits for review. When the several lessons are completed, the student takes a written examination covering the entire subcourse material.

The extension-course program is a responsibility of the Army school system, and all the subcourses are prepared at the service schools. Approximately 1,300 credit hours[*] are available to commissioned personnel. The total enrollment at any one time is about 90,000. Military personnel of all grades are encouraged to utilize the extension course program as a means of increasing their professional knowledge.

To complete a rundown of the opportunities available to any officer for advanced schooling, two other programs should be mentioned. One of these is the opportunity for training in civilian educational institutions and civilian industry. This program was described in the February 1954 issue of *Higher Education.*[7] Secondly, there exists the opportunity for officers to attend schools of the Navy, Air Force, or Marines. With the greater emphasis constantly being placed on joint operations, the extent of cross-service schooling is likely to increase.

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[*] A credit hour is the time a typical student requires to complete a lesson.

Research and Doctrine Activities

The Army school system may be said to have two main functions—the instructional function and the so-called doctrinal function. Doctrine, in military terminology, means that which has been approved—the procedures and techniques, for example. Although this doctrine is published in several mediums, it eventually takes the form of field manuals. The preparation of field manuals is delegated to the several service schools. While preparing the training literature, the Army term for field manuals and textbooks of all kinds, the service schools are in effect producing Army doctrine. This doctrine is, of course, reviewed by appropriate agencies, but the initiative for its production rests with the school system.

The schools are also one of the primary research agencies of the Department of the Army. The school faculties, of course, are engaged in more or less informal research in connection with their day-to-day activities. The preparation of training literature and instructional material regularly begins with a thorough research of the problem.

Recently, a specific provision has been made for a full-time research group within the schools of combat arms and the Command and General Staff College. These groups, tagged the "Combat Developments Section (CDS)," have been liberally staffed and assigned the full-time duty of keeping the Army abreast of trends and developments. They are particularly concerned with projecting plans and procedures into the future when new material and new weapons systems promise to be available. Specifically, the CDS groups evolve or modify current doctrine in the light of new or improved equipment or means. At the same time they establish requirements for new or improved equipment or means to permit the implementation of new or modified doctrine. Further, they have the task of insuring that current doctrine is optimum with respect to current means and conditions.

With the worldwide operational commitment of the Army, it can be expected that Army doctrinal research and development will be conducted more and more by the school system.

Faculty Replacement

In common with civilian institutions, the Army schools and colleges have a continuing problem of faculty replacement, but in the Army institutions the problem is greatly magnified. With the exception of a few civilian instructors in the branch schools—these mostly in specialist courses—and a single professional educator on the school staff, the faculties are entirely officer personnel. These Army instructors are normally assigned to the institution for a 3-year tour. This means that there is at least a one-third faculty turnover annually. The instructors (in the Army one is an *instructor* rather than a teacher, professor, etc.) are officers who are graduates of the courses in which they teach. Despite the tremendous annual turnover, the schools maintain a high level of instruction. To a large extent this is accomplished by careful attention to preparation of the teaching materials, by extensive study, practice, and rehearsal prior to presentation, and by a supervisory control system that insures an acceptable level of teaching.

Publications

In the periodical publication field, the arms profession does not differ from other professions. There are a great number of such publications of varied quality and scope. From the school system proper come three of these periodicals. The best known, perhaps, is the *Military Review* published by the Command and General Staff College. The *Military Review* disseminates modern military thought and current Army doctrine concerning command and staff procedures of the division and higher echelons, and publishes articles which stimulate military thinking. The journal is published in three languages—English, Spanish, and Portuguese. It has subscribers in 58 countries.

Also of Army-wide interest is the publication, *Army Information Digest*, published monthly under the supervision of The Armed Forces Information School, Fort Slocum, N. J. The digest provides timely and authoritative information on the policies, plans, and operation of the Department of Defense, Department of the Army, the other services, and the Reserve components.

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[7] A. B. Butts, The Civil Schooling Program for Army Officers, *Higher Education*, vol. X, No. 6, February 1954, p. 98-101.

Confining itself to a more restricted coverage is the journal from The Infantry School called *The Infantry School Quarterly*. Its subtitle, "The Magazine for Infantry Men," indicates its field of interest.

Organization of the Army School System

Although the term "Army school System" has been used several times in this article, suggesting that there is a more or less formal organization, such in fact is not the case. "School system" has been used to describe collectively the 54 separate facilities offering some kind of formal classroom instruction that are listed in the *Army School Catalog*.

For purposes of control the schools divide into two major categories: (1) the institutions of the Army Field Forces, and (2) the institutions of the technical and administrative services. Disregarding the numerous minor facilities, the Army Field Forces group is composed of the Army War College, the Command and General Staff College, The Army General School, The Infantry School, The Armored School, and The Artillery School, and its Antiaircraft Artillery and Guided Missile Branch. In these seven institutions the school commandant reports to the Chief, Army Field Forces, on all matters concerning curriculum content. In the case of the schools of the technical and administrative services, the chief of the service, for example, The Adjutant General for The Adjutant General's School, is the one with the primary control over course curriculum. The Army Field Forces group enters the picture here only with respect to its "common subjects" program. All the schools are located within geographical limits of one of the continental armies, from which they obtain their administrative and logistic support.

Several measures are taken to insure coordination among the several service schools and colleges. The training literature being produced is reviewed by other interested schools, by Army Field Forces, and by the Department of the Army. Among the schools there is an interchange of instructional material and frequent interschool visits. In most of the branch schools there are some faculty members from a different branch. And once each year there is a conference of the several school commandants. The net result is that despite the absence of a formal "school command" there is a rather closely coordinated "system of schools."

Appraisal

The program for postcommissioned professional education of the Army officer is extensive. Courses range from those dealing with simple skills to postgraduate instruction. The program represents tremendous investment in both money and manpower. While the cost could be computed, the worth of the program is not susceptible of measurement nor reducible to dollar costs. Throughout the Army there is a firm conviction that the school system is a good investment. Almost every senior commander has seen fit to credit the school system for much of the success of our Armed Forces. Perhaps the best testimonial was that of Sir Winston Churchill, who commented: "One of the greatest miracles of this conflict (World War II) was the staff work of the worldwide forces of the United States. That so vast an undertaking could have been successfully prosecuted by so small a body of trained men is resounding tribute to the training of the United States military schools."

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33. Education of Naval and Marine Corps Officers

By HOMER C. ROSE and D. W. FISHER[*]

NAVAL OFFICERS are educated in a variety of ways. Among the factors that influence e education provided by the Navy are the availa-lity of individuals with specialized or professional aining, the technological developments within the avy, and the positions of leadership at the national d policymaking level in which officers must serve. he purpose of this chapter is to describe briefly the ucation and career planning of officers of the egular Navy and Marine Corps.

aval Officer Personnel

A total of somewhat more than 92,000 officers ere on active duty in February 1954 in the Navy d the Marine Corps. (See table 70.) Of this umber, 3,577 were women—3,410 in the Navy and 67 in the Marine Corps.

The majority of the naval officers are line officers—ficers who may exercise military command. The enior line officer present anywhere at any time is ccountable for exercise of his command authority d cannot divest himself of his responsibility. Only nrestricted line officers are assigned to command at a. Among restricted officers of the line are certain ficer specialists such as those designated to perform gineering duty only. They may not command t sea but may have command of shore stations. In eneral, only line officers exercise command at shore cept that members of certain corps, such as Med-al, Supply, and Civil Engineer Corps, command hore activities under the control of their respec-ve bureaus.

Table 70—Naval and Marine Corps Officer personnel on active duty, February 1954

Type of personnel	Number
Naval line:	
Unrestricted	51,838
Engineering duty and other limited line officers	3,814
Total naval line	55,652
Naval staff:	
Supply Corps	5,667
Medical Corps	3,943
Nurse Corps	2,384
Dental Corps	1,822
Civil Engineering Corps	1,791
Medical Service Corps	989
Chaplain Corps	867
Total naval staff	17,463
Marine Corps	19,037
Grand total	92,152

Precommissioned Education

Some naval officers begin their naval education as midshipmen at the United States Naval Academy, some through one of the Naval Reserve Officer Training Corps (NROTC) units at a college or university, and some through years of service as enlisted men and promotion to officer status. Some Reserve officers receive their training in the marine and maritime academies.

U. S. Naval Academy.—Although chaplains and schoolmasters were carried aboard Navy ships in the early days, young officers received only rudimentary and haphazard instruction. This deficiency, and the development of steam-driven ships requiring officers with engineering training, led to the establishment of the United States Naval Academy in 1845.

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Today the 4-year program at the Academy emphasizes education in humanities and sciences along with the basic knowledge required of the naval profession. The emphasis is on a broad base of fundamentals rather than on specialization. The time allocation in the curriculum can be summarized in semester hours as follows: Scientific-engineering, 79.3; social-humanistic, 38.2; military-professional, 36.3; physical training, 5.3; a total of 159.1.

Graduates of the Naval Academy are granted the bachelor of science degree and, if physically qualified, are commissioned in the Navy, the Marine Corps, and the United States Air Force. Those commissioned from a recent graduating class were assigned as follows: 40 percent line (nonaviation), 20 percent line (aviation), 9 percent Marine Corps, 6 percent Naval Supply Corps, and 25 percent United States Air Force.

There are three methods of qualifying for admission to the Academy. The most popular of these is the "college certificate method," which produces about 35 percent of each year's admissions. By this method a year's work in a college or university with certain requirements as to subjects is considered the equivalent of an examination. Next is the "certificate substantiating examination" through which about 33 percent enter the Academy. Under it a high-school certificate is required, supported by an examination in English and mathematics. Last is the method of "regular examinations," which brings in about 32 percent of each class. Those entering by this method are required to pass a comprehensive examination, including English, history, and mathematics. Each applicant must qualify under one of the preceding methods and in addition must take the "U. S. Naval Academy Aptitude Test." Only those candidates who receive outright congressional nominations are permitted to utilize the college certificate method of qualifying without examination.

Appointments to the United States Naval Academy are made by Members of the Congress, the Secretary of the Navy, and the President. The latter makes appointments at large, including the District of Columbia, while the Secretary of the Navy makes appointments from the Navy or Naval Reserve. After appointments are made, all those required to take entrance examinations are notified to do so at the civil service point designated. These examinations are held annually in March.

Naval Reserve Officer Training Corps.—The NROTC had its beginning in 1925, when the Congress conferred upon the Secretary of the Navy the same powers with regard to the Naval ROTC as it had previously conferred upon the Secretary of War with regard to the Army ROTC. The purpose of the NROTC was to provide basically well-educated junior officers for the Naval and Marine Corps Reserve. This purpose remained constant as the NROTC grew from the first 6 units established in 1926 to a total of 27 units during World War II.

In 1946 the Congress authorized a new program within the NROTC, for the training of officer candidates for the Regular Navy and Marine Corps. As now established, the NROTC has the following mission: To provide, by a permanent system of training and instruction in essential naval subjects at civilian educational institutions, a source from which qualified officers may be obtained for the Navy and Marine Corps, and the Naval Reserve and Marine Corps Reserve.

There are 52 NROTC units in colleges and universities. They are administered by professors of naval science who are captains, USN, or colonels, USMC, and staffed by officers and enlisted personnel of the Navy and Marine Corps. The units within any naval district are under the military control of the commandant of each naval district, but matters of policy, curriculum, enrollment and disenrollment, and assignment of personnel are handled directly by the Bureau of Naval Personnel.

There are two types of NROTC students—regular and contract. Regular students are selected by means of an annual competitive examination and selection procedure, and are appointed midshipmen, USNR. The annual quota, as determined by the needs of the service, is divided equitably among all the States and Territories. Regular students receive all their academic educational expenses, as well as retainer pay, for a period of 4 years, and are commissioned in the Regular service.

Contract students, unlike the regular students, do not enter the program through a nationwide competition, but are enrolled on college campuses. They have the status of civilians who have entered into a mutual contract with the Navy. They are not entitled to the compensation or educational benefits paid regular students and are in training for Reserve commissions, although they may apply for Regular commissions.

All NROTC students must take a course of study leading to the baccalaureate degree and must include therein 24 semester hours of naval science, the cur-

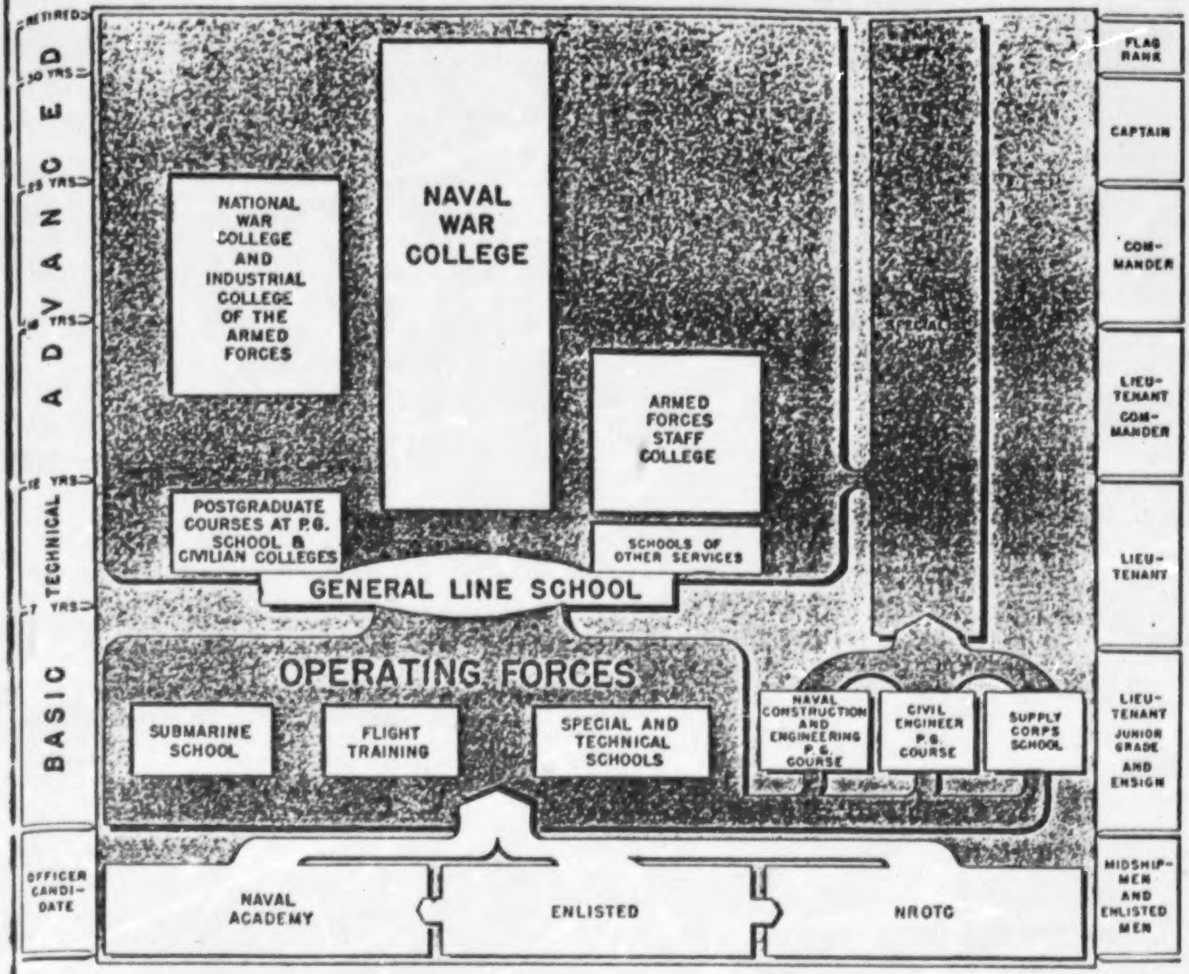
RETIRED
30 YRS
25 YRS
YRS
12 YRS
7 YRS
ADVANCED
TECHNICAL
BASIC
OFFICER CANDIDATE
NATIONAL WAR COLLEGE AND INDUSTRIAL COLLEGE OF THE ARMED FORCES
NAVAL WAR COLLEGE
ARMED FORCES STAFF COLLEGE
SPECIAL
POSTGRADUATE COURSES AT P.G. SCHOOL & CIVILIAN COLLEGES
SCHOOLS OF OTHER SERVICES
GENERAL LINE SCHOOL
OPERATING FORCES
SUBMARINE SCHOOL
FLIGHT TRAINING
SPECIAL AND TECHNICAL SCHOOLS
NAVAL CONSTRUCTION AND ENGINEERING P.G. COURSE
CIVIL ENGINEER P.G. COURSE
SUPPLY CORPS SCHOOL
NAVAL ACADEMY
ENLISTED
NROTC
FLAG RANK
CAPTAIN
COMMANDER
LIEUTENANT COMMANDER
LIEUTENANT
LIEUTENANT JUNIOR GRADE AND ENSIGN
MIDSHIPMEN AND ENLISTED MEN

Figure 1.—Educational program for naval officers.

iculum for which is provided by the Chief of Naval Personnel. All entering NROTC students must ave a sufficient background of English to develop roficiency in oral and written expression. In addition, the NROTC regular student must take 1 year f college physics and mathematics through trigonometry. The NROTC contract student may take ny desired college course of study. The NROTC egular student, however, is not permitted to take ertain studies such as medical, dental, and pretheological.

Other officer candidate training.—Four other forms f training are available for persons who desire to btain commissions in the Naval Reserve. The fficer Candidate School at Newport, R. I., instructs and indoctrinates candidates. Instruction, which continues for 16 weeks, is provided in seamanship, communications, navigation, naval weapons, naval machinery, damage control, military justice, and leadership. Candidates must be male college graduates and meet other age, citizenship, mental, moral, and physical requirements. They may be civilians, inactive reservists, or active-duty personnel.

The officer training program for women at Newport, R. I., instructs and indoctrinates young women who are candidates for commissions in the Naval Reserve. The first 8 weeks are devoted to basic concepts of communications, administration, and naval history. During this period of training, students are in enlisted status. The second 8 weeks of advanced training are devoted to leadership in addition to advanced communications and personnel administration. All students in the advanced course are college graduates with appointments in the grade of ensign. College students may participate in the basic training program during the summer preceding their final collegiate year, and will be commissioned upon graduation.

The reserve officer candidate program is designed to supplement other sources in providing a continuing flow of newly commissioned personnel into the Naval Reserve. Candidates must meet requirements as to age, citizenship, character, and physical standards, and must be enrolled, presently attending, and in good standing in an accredited college or university and must be able to complete two summer training periods of 8 weeks each not later than the summer immediately following graduation. The summer instruction is concentrated in the fields of navigation, naval weapons, leadership, naval orientation, seamanship, and communications.

The United States Merchant Marine Academy and the four State maritime academies are described in another chapter (see p. 288 ff). Reference is made to them here because the Navy commissions many of its graduates as ensigns, USNR (MM), in order to build up the Merchant Marine Reserve. To this end the Navy maintains a department of naval science at each academy. Naval personnel conduct the course in naval science which each merchant marine cadet who aspires to a commission in the United States Naval Reserve is required to take.

The Line Officer's Career

A line officer's normal career in the Navy can be divided into three major educational periods: the basic, technical, and advanced (command and staff). These periods, the corresponding schools, and the ranks of the officers are shown in figure 1.

Basic period.—An ensign's first assignment is normally in a ship of the fleet, where he receives intensive training under the supervision of more experienced officers. His duties include on-the-job training plus study through correspondence courses and required reading. He is rotated through the various departments of the ship and acquires during his first 6 years a foundation of basic and varied experience.

During this period an officer may request a type of duty such as submarine, surface, or aviation. Officers applying for such assignments are selected on the basis of physical and mental qualificati and past record. Some officers are transferred such specialties as civil engineering or Supply Co duty.

Technical period.—The technical period occ between the 7th and 12th years of commissio service. During the first part of this period a officer becomes eligible for his first shore duty. (year of this duty may be spent in the General L School. Officers may apply for assignment to p graduate courses at the Postgraduate School or certain civilian colleges and universities. Enrol for the postgraduate instruction are selected boards of officers who judge the qualifications of applicants. The range of postgraduate educat available during the technical period is illustra by figure 2.

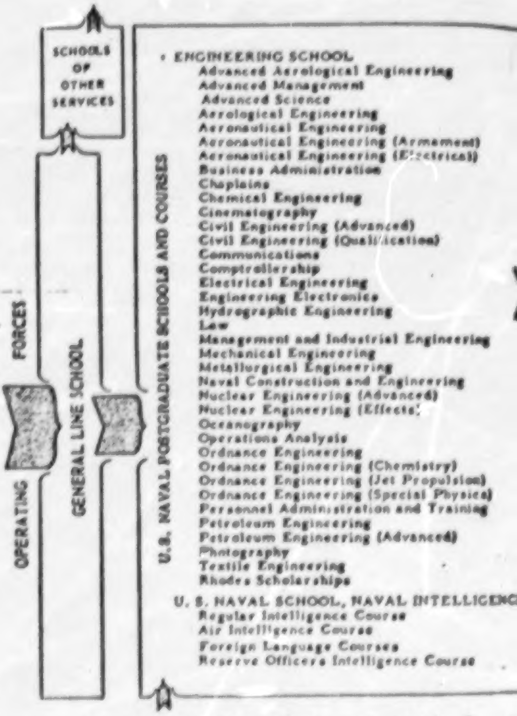
SCHOOLS OF OTHER SERVICES
OPERATING FORCES
GENERAL LINE SCHOOL
U.S. NAVAL POSTGRADUATE SCHOOLS AND COURSES
ENGINEERING SCHOOL
Advanced Aerological Engineering
Advanced Management
Advanced Science
Aerological Engineering
Aeronautical Engineering
Aeronautical Engineering (Armament)
Aeronautical Engineering (Electrical)
Business Administration
Chaplains
Chemical Engineering
Cinematography
Civil Engineering (Advanced)
Civil Engineering (Qualification)
Communications
Comptrollership
Electrical Engineering
Engineering Electronics
Hydrographic Engineering
Law
Management and Industrial Engineering
Mechanical Engineering
Metallurgical Engineering
Naval Construction and Engineering
Nuclear Engineering (Advanced)
Nuclear Engineering (Effects)
Oceanography
Operations Analysis
Ordnance Engineering
Ordnance Engineering (Chemistry)
Ordnance Engineering (Jet Propulsion)
Ordnance Engineering (Special Physics)
Personnel Administration and Training
Petroleum Engineering
Petroleum Engineering (Advanced)
Photography
Textile Engineering
Rhodes Scholarships
U. S. NAVAL SCHOOL, NAVAL INTELLIGENC
Regular Intelligence Course
Air Intelligence Course
Foreign Language Courses
Reserve Officers Intelligence Course

Figure 2.—U. S. naval postgraduate schools.

Advanced (command and staff) period.—The mand and staff period includes the 12th to years of an officer's career in the grades of lieute commander through captain. In a normal ca after 12 years of service, an officer has complete first tour of shore duty, with one or more yea postgraduate study and his second tour at

He has completed his basic and his technical education. His sea and shore experience have prepared him for advanced training of the command and staff period. His job becomes increasingly less one of operation and more one of leadership with greater responsibility and authority. Each officer is encouraged to request assignments which will further his advanced training. It is considered desirable that 1 or 2 years of shore duty during this period be spent under instruction.

The succeeding sections describe the schools and courses which provide training for officers during the various stages of their naval careers.

Five-Term (Semester) College Program

Some officers of the Naval Reserve and some U. S. Navy temporary officers are accepted for transfer to the Regular Navy. The "Holloway Plan," implemented by Public Law 729 (79th Cong.), assured these officers that they would have equal opportunity in the postwar Navy with their contemporaries who were graduates of the United States Naval Academy. Transferred officers who had received temporary promotion from enlisted status and whose prewar education and background includes not more than 2 years of education at the college level are given an opportunity through the 5-term program to obtain up to 2½ years of academic education. They may obtain this education at any college in which there is an NROTC program and at George Washington University, and they may pursue a regular college education until they achieve a minimum of five semesters of college education.

Transferred officers with college education but with limited military experience have been, and will be until 1956, sent to the General Line School, which emphasizes the military and technical side of the officer education. By 1956 the General Line School will have provided this training for most such officers, and its curriculum will be modified to provide the first year of postgraduate education for all line officers.

Postgraduate Training

The Navy requires commissioned officers with advanced general and technical training to meet operational and logistic requirements for the maintenance of national seapower in peacetime and expansion in emergencies. Postgraduate education of commissioned officers, both men and women, in many fields is part of the fundamental naval personnel planning policy. Some, but not all, officers are selected for postgraduate education. It is emphasized that postgraduate education is not necessarily a deviation from a career or unrestricted general line service, nor is it a prerequisite for a successful career as a line officer. Unrestricted general line officers who have completed a specialized postgraduate program will normally serve two tours of duty in the field of their postgraduate study incident to sea-shore rotation.

Advanced education in a technical specialty forms an important part of the preparation of certain officers who are later selected for special duty designations, such as engineering.

In the Navy program, officers are given postgraduate education after they have served, usually, several years in the fleet. In this way, the advantages of maturity and broad viewpoint are realized.

United States Naval Postgraduate School.—The United States Naval Postgraduate School at Monterey, Calif., is responsible for the graduate technical and professional education of naval officers to improve their value to the naval service. The instruction is conducted partly at the school itself and partly at various civilian institutions, in order to utilize the best available resources in each field. Some instruction is conducted entirely at Monterey and some entirely at civilian schools; some courses include study at civilian schools after a year or more at Monterey.

Naval Intelligence School.—Naval intelligence postgraduate instruction is conducted at the Naval Intelligence School, Washington, D. C., which is a part of the United States Naval Postgraduate School.

The establishment at Monterey comprises two distinct components—the General Line School and the Engineering School. The General Line School provides education in professional naval subjects to broaden the officer's background in the variety of fields required in his naval duties. At present, the General Line School curriculum consists of both undergraduate- and graduate-level courses; however, it is contemplated that a 36-week curriculum, primarily at the graduate level, will be inaugurated in 1955.

The Engineering School provides advanced engineering and scientific education. The curriculums stress basic sciences and their application to the chosen engineering field. Instruction consists of college-type lecture and laboratory periods. During the summer, students spend several weeks on field trips observing operations in industrial and military installations, or in some cases taking short courses at civilian schools.

The Engineering School is not primarily a school for teaching the techniques of machinery and engineering plant operation, etc.; in this respect it differs from the various fleet and shore activities such as the Damage Control Schools. The instruction is intended to promote understanding of basic principles, with some engineering application, and to develop capacity for independent thought.

The Naval Intelligence School conducts training for men and women officers in all phases of intelligence, including strategic, operational, and counterintelligence. The postgraduate naval intelligence curriculum consists of classroom instruction in the basic principles and techniques of intelligence operations, supplemented by lectures, seminars, and the solution of practical intelligence problems. This practical training is followed by a foreign language and area study course. In addition, the Naval Intelligence School conducts intensive instruction in foreign languages to meet the needs of the Navy for officer linguists.

Advanced (Command and Staff) Training

A thorough knowledge of the Nation's policies and the correct conception of the strategy necessary for success in national enterprises are essential for higher command. It is considered necessary that every experienced naval officer possess a thorough knowledge of the principles and methods of naval strategy and tactics, and of joint operations with other branches of the Armed Forces. He must have sufficient knowledge to interpret correctly strategic and tactical decisions of the Nation's leaders.

To achieve these objectives, courses are provided at the Naval War College, the National War College, the Industrial College of the Armed Forces, and the Armed Forces Staff College. Of these, the last three are joint colleges maintained under the Joint Chiefs of Staff.

Naval War College.—The Naval War College at Newport, R. I., is conducted under the supervision of the Chief of Naval Operations. Its mission is to further understanding of the fundamentals of warfare, with emphasis on their application to future naval warfare, in order to prepare future officers for higher command. The college provides flag officer refresher courses, courses of advanced study in strategy and seapower, a 2-year course in naval warfare, and command and staff courses for lieutenant commanders and officers of equivalent ranks to further their understanding of the fundamentals of warfare with emphasis upon the operational functions of command and the organization, functions, and procedures of operational staffs.

Joint colleges.—The three joint colleges are described in chapter 32.

United States Marine Corps Officer Training

Some of the education and training of the Marine Corps officers is received in schools maintained by the Army and the Navy branches of the Defense Establishment, but a large part of it is obtained in schools maintained by the Marine Corps.

Precommissioned training.—Marine Corps officers acquire their precommissioned college education in a number of ways. Some are graduates of the United States Naval Academy and the NROTC program. A modified curriculum is provided for those in the NROTC program who will be commissioned in the Marine Corps. Other officer candidates and precommissioning programs include the platoon leaders' course, the woman officer training course, and the officer candidate course, all conducted at Quantico, Va.

The platoon leaders' course provides summer training for college students—one 6-week period between the sophomore and junior years and the second 6-week period between the junior and senior years. The training is practical in nature and is largely composed of fieldwork. The curriculum of the woman officer training course is similar to that of the platoon leaders' course.

The officer candidate course is designed for college graduates who have not been in the ROTC program, and for meritorious enlisted men who qualify and are selected. This is a 10-week course. The objective of this course is both to screen and to train.

The school system.—The objective of the school-training program for officers in the Marine Corps is to insure the professional education of commissioned personnel as a whole rather than the comprehensive education of a selected minority. Therefore, depending on the limitations in the training establishment (school capacities and number of schools, etc.) and certain restrictions on the availability of officers, general "career training" is given to as many officers as possible at appropriate stages of their development.

The school system used by the Marine Corps is designed as a number of progressively elevated levels. It begins with fundamental orientation, indoctrination, and training provided to newly commissioned officers, proceeds through intermediate levels for officers who have reached field grade, and culminates in the "high-level" and "top-level" schools for senior officers. Throughout this development, above the basic level, the Marine Corps takes advantage of the various schools conducted by the Navy, Army, and, to a limited extent, by the Air Force. The primary reason for making use of other service schools is the relatively small size of the Marine Corps, which prohibits a large and expensive school system in the Corps. There is, of course, some participation by the other services in the schools of the Marine Corps.

Basic School.—Upon receiving his commission as a second lieutenant in the Marine Corps, each new officer attends Basic School at Quantico. The Basic School trains all newly commissioned officers in the duties and responsibilities of company-grade officers, with particular emphasis on the duties of the infantry platoon commander. Since the Basic School actually constitutes a threshold of the professional career, its curriculum includes emphasis on orientation and indoctrination as well as instruction in leadership and military skills. The length of the Basic School is 21 weeks, and a new class is convened whenever necessary to accommodate a group of new officers.

Junior School.—The purpose of the Junior School is to train Marine Corps officers of the grade of captain and major for the command of a Marine battalion or squadron, as appropriate, and for all aspects of staff duty at the levels of a Marine regiment or group and division or wing. The curriculum is designed for students who are both ground and aviation officers and thus acquaints the members of each arm with the problems and methods of the other—an educational process vital to the Marine Corps concept of a tightly coordinated air-ground task organization. The Junior School is 9 months in length and convenes once a year.

Senior School.—When an officer reaches the grade of lieutenant colonel he is eligible for assignment to the Senior School. Students are composed of both lieutenant colonels and colonels, who are trained for the command of a Marine regiment or group, as appropriate, and for all aspects of staff duty at the levels of the Marine division or wing and the landing force. Primary emphasis is placed on advanced instruction in the latest doctrines and techniques of amphibious warfare, with particular attention to the coordinate employment of air, naval, and ground elements. The Senior School is 9 months in length and is convened once a year.

Top-level schools.—Top-level schooling is provided for selected officers who are assigned from the ranks of senior lieutenant colonels and colonels. While training at the basic, intermediate, and high levels is based on the policy that all officers are to receive schooling, it is necessary to limit the training of officers on the top level to those whose prospective duty assignments and time in service indicate the greatest advantage to the Marine Corps in such training. Professional education at this level includes a use of such schools as the National War College, the Industrial College of the Armed Forces, the Army War College, the Naval War College, and the Air War College.

Postgraduate schools.—Courses conducted by civilian institutions, varying in length from 1 to 3 years, are utilized by the Marine Corps in preparing selected officers for certain critical task assignments. Because of the expense of this training, in both time and money, it must be accomplished on a basis of the minimum required and be directly related to the qualifications demanded by the billet assignment. The Marine Corps participates, for this purpose, in the postgraduate program conducted under the cognizance of the Navy.

Naval Aviation Officer Training

The peacetime training of naval aviation officers is quite different from wartime training. In an emergency the Navy must emphasize specialization and train its personnel in as short a time as possible. In times of emergency or war the Navy must temporarily sacrifice its traditions of broad overall education in favor of specialization. This is particularly true of aviation training where during wartime a naval aviator's primary mission is flying a plane in combat. To help him are recognition officers, navigators, ordnance specialists, etc. In peacetime most naval aviators are also ground officers and are expected to qualify in more general phases of aviation and for greater responsibility.

Sources of young officers for naval aviation are volunteers from the Naval Academy, the merchant marine, the NROTC, the Officer Candidate School, and the Reserve Officer Candidate School. These officers generally request flight training and, upon the successful completion of physical and aptitude examinations and when commissioned, are ordered to the United States Naval Air Training Command, Pensacola, Fla. There they begin a program of flight training which is concluded about 18 months later with the designation of those officers successfully meeting the standards as naval aviators.

Flight training is divided into two phases: Basic training which essentially provides the fundamentals of flying, tactics, and instruction on such subjects as communications, engineering, aerology, navigation, and aerodynamics; and advanced training which emphasizes and refines in operational types of airplanes the basic training. Newly designated naval aviators are obligated to serve an additional 2 years in the naval service. This is usually spent in an operating squadron where the naval aviator is required to perform administrative duties in addition to his primary task of piloting.

Insufficient numbers of aviators are available from the above-listed sources; thus, the naval aviation cadet (NAVCAD) program. Applicants having successfully completed 2 years at an accredited college and having passed the physical and aptitude examinations are appointed NAVCADS. During their training, which is the same as that described above, the NAVCADS remain in an enlisted status. Upon being designated as naval aviators, the NAVCADS receive commissions as ensigns in the Naval Reserve.

Supply Corps Officer Training

The mission of Supply Corps training is to enable naval officers to meet their civilian counterparts in business on the same educational and professional level. Officers are procured from many sources, including the NROTC, the Naval Academy, and from transfer from the line. Their first assignment is to attend a 7-month basic course of instruction in the principles of supply, accounting, and disbursing. Following this course they are ordered to jobs at sea or ashore where they can put into practice the training they have received. Supply Corps officers, like all other naval officers, are encouraged to plan their careers and to take advantage of educational courses. There are many specialties open to officers of the Supply Corps that parallel the growing problems of material control, purchasing, determining requirements, storing, shipping, and accounting for the needs of the Navy.

At the junior level of specialization are such fields as ships' service, fuel, aviation supply, cargo handling, and electronics supply. At the senior level are the specialties of accounting, inventory control, personnel administration, and retail merchandising. Selected officers are sent to such courses as the 2-year course at Lowell Technological Institute which leads to a degree in textile engineering, the Harvard School of Business, and several joint schools specializing in military supply. Supply Corps officers with senior rank may attend command and staff schools along with other officers of all branches of the service.

Civil Engineer Corps Training

Navy Civil Engineer Corps officers design, construct, and maintain shipyards, bases, centers, and air stations. Officers for the Civil Engineer Corps (CEC) are procured from the Naval Academy, the NROTC, and civilian life.

Naval Academy graduates entering the CEC are sent to Rensselaer Polytechnic Institute for 15 months of engineering training, which leads to the bachelor of science degree in civil engineering. Rensselaer also provides an "equalization course" for officers with engineering degrees who have had 2 years duty in the CEC. CEC officers appointed directly from civilian life are usually ordered to the Civil Engineer Corps Officers' School at Port Hueneme, Calif., which trains them in the duties they will perform in the Navy.

Although the majority of CEC officers are civil engineers, there are also some electrical, mechanical, and chemical engineers in the corps.

Health Personnel Training

The Bureau of Medicine and Surgery of the Navy Department is responsible for the professional training of personnel of the medical, dental, medical service, and nurse corps.

Officers in the Medical Corps are selected from graduates of approved medical schools; thus their training while in the Navy is graduate training. The Bureau of Medicine and Surgery is assisted in the graduate medical training program by a civilian Board of Consultants, members of which represent each of the major medical specialties as well as the American Medical Association Council on Medical Education and Hospitals. Graduate medical training consists of three general types: internship, residency training and continuation courses, and special courses.

The Dental Corps is composed of dental officers selected from graduates of civilian dental schools. Postgraduate training for dental officers is available in naval and joint schools and in civilian colleges. The United States Naval Dental School, which is affiliated with the American Association of Dental Schools, provides a general postgraduate course and several specialized courses. A few officers are assigned to research training and to the dental faculty of the Naval Medical Research Institute.

All officers within the medical and dental specialty are encouraged to apply for postgraduate courses and refresher courses in subjects for which they have special skill and interest.

The Medical Service Corps is made up of officers specializing in supply and administration, optometry, pharmacy, podiatry, and allied medical sciences. Personnel of Medical Service Corps specializing in supply and administration come from within the service and are given special training in the Naval Medical Center, civilian institutions, and joint schools. Medical Service Corps officers specializing in optometry, pharmacy, podiatry, and allied medical sciences are procured directly from civilian life. Women officers are appointed to the Medical Service Corps in certain specialties.

Nurses in the Nurse Corps are commissioned after being selected from graduates of accredited nursing schools. The Navy provides for training of nurses leading to the baccalaureate degree in nursing or nursing education. A variety of courses are provided each year, and nurses approved for special training become a part of the regular student body in civilian universities. Opportunities for advanced professional training of nurses are available for nurses who demonstrate aptitude for such training.

Correspondence Courses

For many years the Navy has encouraged self-study through correspondence-course work. Such courses cover many of the specialties required of officers, and the program is being expanded to include all subjects appropriate to naval officers at each rank level in order to provide for progressive, guided study and to raise and broaden the scope of professional knowledge of all naval officers. The largest number of correspondence courses is provided by the Naval Correspondence Course Center, the present enrollment being about 54,200. High-level courses are offered by the Naval War College and the Industrial College of the Armed Forces. In addition, the Marine Corps provides correspondence courses designed for its specific needs through the Marine Corps Institute. Officers of all services may enroll in courses provided by other services, and many naval officers take advantage of appropriate courses offered by the Army and the Air Force.

Courses in more general fields ranging from language study to electronics, including courses in almost everything offered in civilian schools, are available through the Navy's information and education program. The backbone of this program is the United States Armed Forces Institute (USAFI), which offers over 300 correspondence and self-teaching courses, a large proportion of them on the college level. Thousands of correspondence courses are available through USAFI from participating colleges and universities.

Correspondence courses help to satisfy the individual officer's need for a variety of kinds of education, both to support his military training and responsibilities and to provide a more general background of education of value to him personally.

Training of Faculties

The instructional staff of Navy schools is made up of military personnel or teams of military and civilian personnel. Military personnel are normally assigned to a school for about 3 years. Civilian personnel are about as permanent as faculty members in civilian schools. Civilians are used in key positions where their professional knowledge and skill can have the greatest effect on the program.

Military personnel bring to the school essential firsthand and current information based on experience in the fleet. To provide such personnel with a degree of skill in teaching, special instructor training courses are made available. A major program of this type is that provided for officers who have been designated as instructors and professors of naval science in the 52 colleges and universities providing naval officer training in the Naval Reserve Officers' Training Corps program. This program is conducted in cooperation with Northwestern University each summer. It is designed to provide instruction and experience in four areas: Functional speech, administrative procedures, educational psychology, and educational procedures. The educational procedures part of the course consists of conferences on methods of instruction, testing, training aids utilization, lesson planning, and practice teaching. For this instruction the large group of approximately 140 officers is divided into 7 sections, each under the supervision of a member of the educational procedures staff.

The instructional staff is drawn largely from Northwestern, other NROTC universities and colleges, and the Bureau of Naval Personnel; however, a number of educators are employed as individuals because of the particular contribution they can make to the program.

A significant feature of the training is the practice teaching. Each officer prepares and presents several types of lessons. These lessons are analyzed and evaluated by members of the class. Naval officers have found this experience so helpful that the time devoted to practice teaching has been increased each year.

Summary

The professional education program for naval officers contains many features designed to meet the needs of modern warfare. An officer's education continues throughout his career and reflects both his personal interests and the needs of the service. The Navy considers its school program essential and strives to make it as effective as possible. Each school, as well as each course, is designed to meet a specific objective in the minimum time, and curriculum changes are constantly being made to improve the quality of instruction.

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34. Education of Air Force Officers

By JAMES C. SHELBURNE and COLONEL CHARLES H. CONNELLY, USAF[*]

BEGINNING with 1 officer and 2 enlisted men on August 1, 1907, as the Aeronautical Division within the Signal Corps, the Army air arm was successively designated as the Aeronautical Section, Air Service, Army Air Corps, and finally during World War II as the Army Air Forces.

As a result of the passing of the National Security Act of 1947, the Army Air Forces (AAF) became the United States Air Force (USAF) on September 18, 1947. Prior to this date, as a part of the Army the air officer attended, with one exception, the professional schools designed primarily for infantry and cavalry officers. This one exception was the Air Corps Tactical School at Maxwell Field, Ala. In a description of the professional education of the air officer prior to World War II, an air planner of that war wrote:

"With one notable exception, though, there was no formal program of education (as distinguished from training) for air officers during that * * * period. What education there was was almost invariably a by-product of the formal instruction provided in Army service schools; or it was the outgrowth of intensive study and reflective thinking by outstanding officers of the air arm, who, like Mitchell, expounded their theories and beliefs with the zeal and courage of missionaries and visionaries which, of course, they were. That exception, the one institution designed expressly for the education of air officers, was the Air Corps Tactical School. * * * To that small school * * * must go everlasting credit for the decisive role it played in developing, defending, and teaching the strategic and tactical doctrines and concepts which proved so eminently successful when tested in the laboratory of the greatest war in history."[1]

Today there are approximately 130,000 officers in the United States Air Force. Of this number, about one-fifth hold Regular commissions; the remaining officers are Reserve or National Guard officers and are serving either for relatively short tours of duty or have signified their intention to stay on active duty as long as their services are needed. The Regular officers and those serving for an indefinite time are, for the purposes of this discussion, termed "career officers." This article describes the progressive plan for the training and professional education of these career officers. The accompanying chart (fig. 3) is designed to facilitate the description.

Sources of Officers

Officers are commissioned in the Air Force from several sources: The Air Force Reserve Officer Training Corps (AFROTC) in 188 civilian colleges and universities in the United States, the Military Academy at West Point and the Naval Academy at Annapolis, the Air Force Officer Candidate School, the aviation cadet program, and from civil life by direct commissioning. For the predictable future, approximately 80 percent of the active-duty officer personnel of the Air Force will come from graduates of the AFROTC, about 20 percent from the military academies, and a much smaller but varying percentage from the other three sources. By agreement with the Army and the Navy, the Air Force receives 25 percent of the graduates of each of the two academies. These agreements will terminate when the recently authorized Air Academy is fully established, but this Academy will ultimately supply only about 20 percent of the annual increment of officers to the Air Force (including Regular and Reserve on active duty).

Air Force ROTC.—The objective of the Air Force ROTC is to produce a well-educated Reserve second lieutenant motivated to serve in the Air Force. Of the usual 4-year undergraduate curriculum, 480 hours of classroom instruction are devoted to air science subjects. No attempt is made to train the ROTC student in an Air Force skill while he is in college.

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[1] "U. S. Air Force Education," by Maj. Gen. Muir S. Fairchild, in *Air Affairs*, II (Winter 1948), p. 209-211. See also "History of the Air Corps Tactical School," U. S. Air Force Historical Study No. 100. Unpublished paper prepared by the USAF Historical Division, Air University, Maxwell Air Force Base, Ala., 1954. 148 p.

Rather, the objective is to make him aware of the implications of his living in the air age and to give some emphasis to his responsibility for the defense of his country. Air science subjects include fundamentals of global geography, elements of aerial warfare, aerodynamics and propulsion, military aspects of world political geography and military aviation, and the evolution of warfare. Throughout the 4 years, the cultivation of traits of leadership is emphasized. At the end of the junior year a summer camp provides the student with experience through field exercises, flying, and participation in typical airbase activities and problems.

United States Air Force Academy.—The purpose of the United States Air Force Academy will be to graduate a Regular second lieutenant, who like his ROTC counterpart, will have a good general education and some specialized knowledge in air science and tactics. The Academy graduate will have had sufficient flying training to qualify as a rated observer.

In broad outline, the Air Force Academy curriculum will consist of 3,177 instructional hours in academic subjects and 2,176 hours in airmanship. In the senior year the cadet will have the option of specialization in languages or in science. Under present plans, if he elects the science option, he will have had upon graduation 1,629 hours in the sciences and 1,314 hours in the social sciences and humanities. On the other hand, if he selects the language option he will have had 1,548 hours in the social science-humanities fields and 1,395 hours in science. It is planned that the 2,176 hours in airmanship will include 958 hours in basic military training and leadership, 373 hours of physical education, 645 hours in aircraft observer training, and 200 hours in phase 1 of pilot training.

Legislation establishing the Air Force Academy provided that existing laws pertaining to the United States Military Academy were to apply, where applicable, to the new Academy. Thus, the student body will consist of about 2,500 cadets, with an annual graduating class of 500. The Academy will supply 50 percent of the Regular officers on duty with the Air Force. A like percentage will come from Reserve officers on active duty, largely ROTC graduates, who will be selected for permanent commissions on a basis of their records.

Like the United States Military Academy and the United States Naval Academy, the Air Force Academy will stress public service and exemplary personal conduct. These objectives were stressed recently by John A. Hannah, Assistant Secretary of Defense, in his testimony on the proposed Air Force Academy before the House of Representatives Committee on Armed Services:

"I am now strongly convinced of the wisdom of establishing an Air Force Academy, believing it to be necessary from the standpoint of national defense, and wholly desirable from an educational point of view.

"I have been led to this complete change of attitude by the personal observation that West Point and Annapolis perform two unique functions which no civilian institution of like rank can hope or be expected to do.

"I am impressed, first of all, with their intense and continued emphasis upon the ideal of service to the country. Nowhere else, so far as I know, are young men exposed to just that sort of influence over a protracted period. Loyalty and dedication to the service are hallmarks of the graduates of the Military and Naval Academies, and we would be in a sorry state if the professional officers' corps did not have a high proportion of men who are motivated by just those ideals. Since such training is available nowhere else, it is not only desirable but necessary that the Air Force should have its own Academy where it can teach its own cadets those same lessons.

"Second, I am impressed by the high standards of integrity and personal ethics enforced at the two service academies. No one would claim that their graduates are totally beyond reproach, but I do maintain that few professions, if any, can match the success of the service academies in inspiring their members to live up to such high standards of integrity and ethical conduct. These qualities are those which Americans demand of the officers who may some day lead their sons into combat. Again, the Air Force is certainly entitled to have its own Academy where it can indoctrinate its own cadets with the ideals and proud historical traditions of American military airmen."[3]

Air Force Officer Candidate School.—The central peacetime purpose of the Officer Candidate School is to provide an avenue through which exceptionally qualified enlisted personnel may enter the officer corps of the Air Force. At present the course of instruction in this school covers a period of 24 weeks. The curriculum includes such subjects as basic con-

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[3] Full committee hearings on H. R. 5337, "To Provide for the Establishment of a United States Air Force Academy." House of Representatives Committee on Armed Services, January 13, 1954.

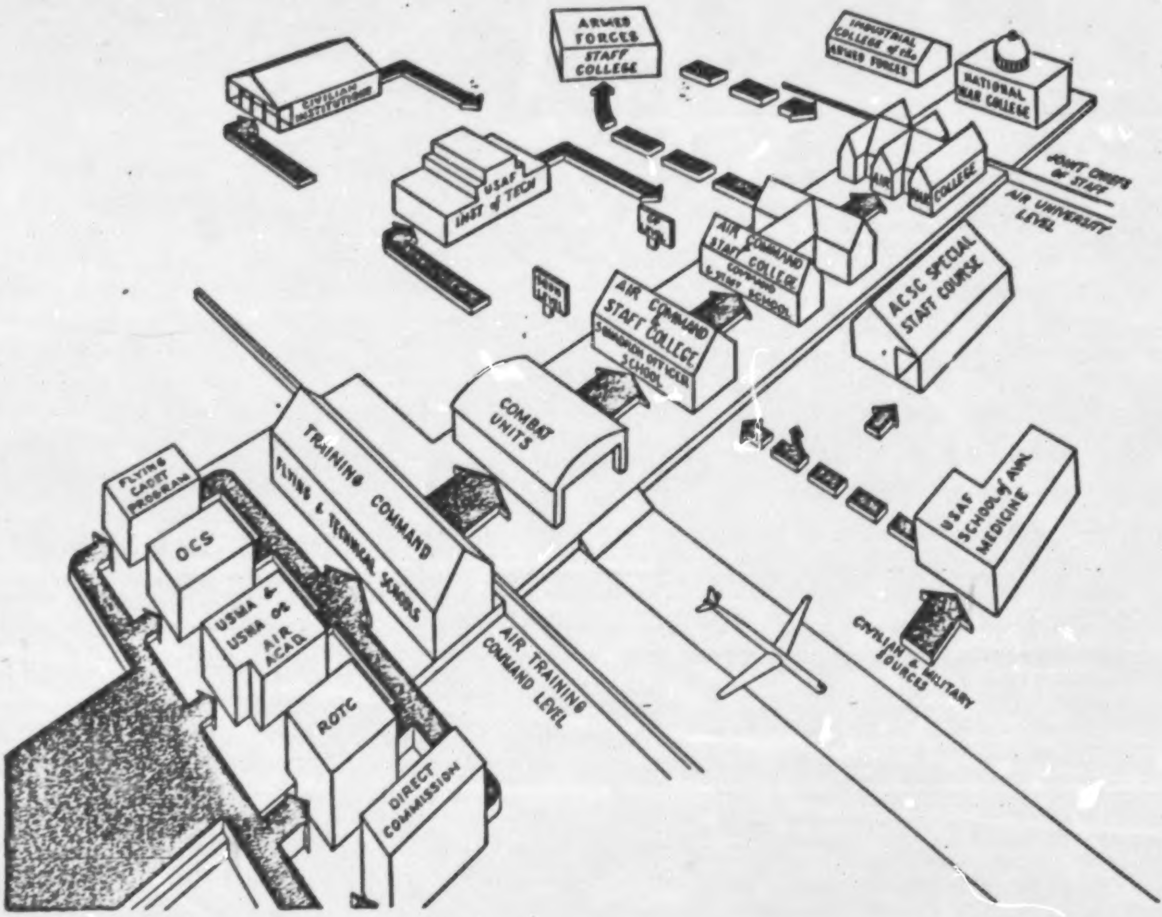
CIVILIAN INSTITUTIONS
ARMED FORCES STAFF COLLEGE
INDUSTRIAL COLLEGE of the ARMED FORCES
NATIONAL WAR COLLEGE
JOINT CHIEFS OF STAFF
AIR UNIVERSITY LEVEL
USAF INST of TECH
AIR WAR COLLEGE
AIR COMMAND STAFF COLLEGE COMMAND & STAFF SCHOOL
AIR COMMAND & STAFF COLLEGE SQUADRON OFFICER SCHOOL
ACSC SPECIAL STAFF COURSE
COMBAT UNITS
TRAINING COMMAND FLYING & TECHNICAL SCHOOLS
FLYING CADET PROGRAM
OCS
USMA & USNA OR AIR ACAD
ROTC
DIRECT COMMISSION
AIR TRAINING COMMAND LEVEL
USAF SCHOOL of AVN MEDICINE
CIVILIAN & MILITARY SOURCES

Figure 3.—Training program for Air Force officers.

cepts of discipline, leadership, administrative practices, and moral responsibilities of the officer. The graduates are commissioned as Reserve second lieutenants and serve in administrative and technical positions rather than as flying officers.

Aviation cadet program.—The fourth source of recruiting officers is through the aviation cadet program from civilian life and from the enlisted personnel of the Air Force. The aviation cadet who earns his wings is commissioned a second lieutenant in the Reserve.

Commissioning from civil life.—The final source of officers is through direct commissioning from civil life of certain specialists, such as chaplain, medical, dental, and legal personnel. The appointments, as Reserve officers, are made in such numbers, grades, and military specialties as are required by the Air Force.

Skill Training

The operation of a modern Air Force calls for many and varied skills. While many of those skills are acquired by successive on-the-job experiences, initial skill training is the province of the Air Training Command. This command, with headquarters at Scott Air Force Base, Ill., is functionally divided into three training air forces utilizing 42 Air Force bases. During fiscal year 1954 this command taught some 270 different courses for both officers and airmen. The Technical Training Air Force with headquarters at Gulfport, Miss., trains technicians; the Flying Training Air Force centered at Waco, Tex., is responsible for the individual training of pilots, navigators, bombardiers, and radar observers; and the Crew Training Air Force, with headquarters at Randolph Air Force Base, Tex., conducts training for rated pilots and observers in first-line combat aircraft.

The courses of instruction taught in these training establishments range in length from 9 weeks for the air transportation officers course to 41 weeks for the air electronics officers course.

After the officer has been trained in his initial skill, he is assigned for duty with one of the major commands of the Air Force.

After his initial duty assignment and throughout his subsequent service, the officer will acquire new skills. In order to provide for a progressive personnel classification system as a basis for manning, utilization, and career development, the Air Force has identified 137 specialties. Each of these specialties is given a number, called an Air Force Specialty Code (AFSC). These AFSC's are grouped into the 21 officer occupational fields, such as combat and operations, intelligence and psychological warfare, photography and cartography, weather, and medical.

The classification system is designed to highlight the managerial, technical, and staff responsibilities of Air Force officers. It provides a pattern of orderly progression from low- to high-level positions, relates specialties to specific grades, and groups related specialties into occupational fields within which an officer may progress to the rank of colonel in an area of specialization. In essence, the officer classification system provides the basis for career progression as well as identification of individual abilities.

Professional Education and Air University

Thus far this chapter has described the various means by which officers are commissioned and the structure of skill training in the Air Force. The remainder will be devoted to the professional, as contrasted with the vocational, aspects of the officer's education. No sharp line of demarcation can be drawn between training and education. Certain skill training is inexorably present in almost any program of professional education. Indeed, the term "profession" itself is equivocal.[3]

Beginning in 1939 and continuing through World War II, a series of boards and committees within the Army Air Force developed plans for the improvement of the structure and subject matter for the professional education of career air officers. During the war this planning was accelerated in anticipation of the time when the Air Force would have a larger degree of autonomy, and because the rapidly increasing complexity of warfare and its global character clearly demanded that the air officer of the future have a much broader professional preparation and deeper insights into social and political as well as the technological fields of knowledge. As a result the Air University was established as a major command of the Air Force on March 12, 1946.[4]

The mission of the Air University is to: (1) prepare officers for command of large Air Force units, wings, groups, and squadrons, and for staff duties appropriate to those command positions; (2) provide education to meet the scientific and technical requirements of the Air Force; (3) provide instruction in aviation medical services; and (4) function as an Air Force doctrinal, educational, and research center.

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[3] See "Toward a Definition of Profession," by Morris I. Cogan, in *The Harvard Educational Review*, XXIII (Winter 1953), p. 33-50.

[4] James C. Shelburne, *Factors Leading to the Establishment of the Air University*. Unpublished doctoral dissertation. University of Chicago, 1953.

The Air University, with headquarters at Maxwell Air Force Base, Ala., supervises and operates the Air Command and Staff College, the Air War College, the USAF Institute of Technology, the USAF School of Aviation Medicine, the USAF Reserve Officers Training Corps, the USAF Extension Course Institute, the Air University Library, and the Research Studies Institute. The university also has responsibility for selecting, training, and supervising Air Force officers who are instructors in Army and Navy professional schools.

Air Command and Staff College

The Air Command and Staff College carries on the squadron officer school, the Command and Staff School, and special staff courses.

Squadron officer school.—After the officer has been commissioned and trained and after he has served for about 5 years, he may be sent to the squadron officer school in the Air Command and Staff College. (See fig. 3.) The course of study is 14 weeks in length. Seven hundred and fifty officers, including some allied officers, make up the student body. Each major command is assigned a quota in the school. To be selected, the officer must be a lieutenant or captain with not less than 1 nor more than 6 years of active Federal commissioned service and must not have reached his 35th birthday as of the class starting date. Non-Regular officers must have accepted an indefinite Reserve commission. Four classes are given each year at Maxwell Air Force Base.

Until this time the officer has been a specialist. Now for the first time in his career he studies problems concerned with command of the lowest organizational unit in the Air Force—the squadron. During this 14-week school he is carefully examined as to his ability to write and speak effectively and to work in small groups. About 35 percent of the 14-week school is devoted to lectures. For the remainder of the time the officer is assigned to a section consisting of 11 fellow students and an instructor. The men in each section collectively consider a series of problems dealing with the life cycle of a typical Air Force squadron. Each section works together, eats together, and plays together. Each man is carefully watched by the assigned instructor to discover leadership potentialities in a variety of situations.

The objectives of the school are to secure an understanding of: (1) National and international geography, cultures, ideologies, politics, theory of war, and other subjects as they relate to and affect military strategy; (2) Air Force objectives, organizations, doctrines, procedures, strategies, and tactics; (3) the principles, and the application thereof, of command and staff responsibilities, organizations, and procedures; (4) scientific and technical developments as they are related to the Air Force and airpower generally; (5) oral and written expression, reading, conference procedures, logical presentation, human relations, and related individual communicative skills; (6) the ethics and techniques of leadership and their interrelationship; (7) the interrelationship of military and civil instruments of national power; (8) the proper utilization of the resources of the Air Force and the Nation; (9) requirements for professional and managerial competence in terms of Air Force requirements; (10) problem solution through both individual and group action; (11) sources of information needed by squadron-grade officers; (12) the value of team spirit and an understanding of how to develop it in a unit; (13) the officer's position and responsibilities as a representative of the Air Force in the tense world today; and finally (14) the need for and function of military training and discipline in the Air Force. It is also intended that the student will acquire motivation to plan and begin a program of self-education for professional improvement.

Upon graduation from the squadron officer school the officer is reassigned to one of the major commands of the Air Force.

Command and Staff School.—At approximately his 10th year of commissioned service, if he is fortunate, the career officer will be nominated by his command to attend the Command and Staff School of the Air Command and Staff College. To be selected, the career officer must be in the grade of major or lieutenant colonel and have served not less than 7 nor more than 13 years in the active Federal commissioned service and not have passed his 38th birthday.

This school, like the squadron officer school, deals with a series of realistic Air Force problems, but at a more complex level—that of the group and numbered Air Force. The mission of the school is to increase the abilities of selected officers to exercise the command tasks associated with wings and groups and to perform the principal staff tasks associated with numbered Air Force air divisions and wings.

The educational objectives of the school are to help the officer acquire the fullest possible understanding of the following areas, particularly as they relate to command and integrated staff action: (1)

National and international geography, cultures, ideologies, politics, theory of war, and other subjects as they relate to and affect military strategy; (2) Air Force objectives, organizations, doctrines, procedures, strategies, and tactics; (3) the principles, and the application thereof, of command and staff responsibilities, organizations, and procedures; (4) scientific and technical developments as they are related to the Air Force and airpower generally; (5) oral and written expressions, reading, conference procedures, logical presentation, human relations, and related individual communicative skills; (6) the ethics and techniques of leadership and their interrelationship; (7) the interrelationship of military and civil instruments of national power; (8) the proper utilization of the resources of the Air Force and the Nation; (9) requirements for professional and managerial competence in terms of Air Force requirements; (10) problem solution through both individual and group action; (11) the USAF and related subjects essential for professional proficiency of commanders and staff officers; (12) the basic characteristics of military forces and the capabilities of land, sea, and air forces in securing national objectives; (13) the capabilities and the employment of USAF units; and finally (14) the capabilities and application of modern weapons systems. The officer should also acquire increasing ability to analyze, evaluate, and project his thinking in areas of doctrine, strategy, and tactics.

Instruction in the Command and Staff School centers on the problems normally encountered by group and wing commanders and staff officers of the grade of major, lieutenant colonel, and colonel. Instruction in other areas is included to the extent necessary to permit a full understanding of the areas of primary concern. There are three phases of the curriculum: orientation, command and staff, and employment.

This school is 9 months in length. Approximately 500 students attend the school. Many of the students are combat veterans of both World War II and the Korean war. This number includes officers from the Army and the Navy and air officers from allied countries. Upon graduation the officer either returns to the command that nominated him for the school or is assigned to another large Air Force unit for duty.

Special staff courses.—The Air Command and Staff College also offers an instructor training course for officers who are to be assigned to teach in Air University schools or in other Air Force schools. This course is 6 weeks in length, and the students may range in rank from airman to colonel. The Air Command and Staff College gives special instruction in an air-weapons course for commanders and for armament, intelligence, and operations staff officers of field grade. The purpose of the course is to afford these officers an opportunity of obtaining a thorough understanding of the entire air-weapons field, and an ability to solve problems associated with weapons employment. This is a 9-week course. A clinic or orientation of 1 week in the weapons field is also available to senior officers and selected civilians whose duties require knowledge of the subject matter in this field.

Air War College

The senior school of the Air University is the Air War College, at Maxwell Air Force Base. Officers are selected to attend this school by a board of general officers convened in Washington, D. C., for this purpose. To be eligible for consideration by the board, the officer must be a colonel with less than 20 years of service. Air Force Reserve and Air National Guard colonels under 45 years of age are also eligible for selection. The Army, Navy, State Department, Central Intelligence Agency, and the British Royal Air Force are given quotas in this class, and their representatives constitute 30 out of a total student body of 160. The course is 10 months long.

The purpose of the Air War College is to prepare carefully selected senior officers for high command and staff duty with large Air Force units. The college also has the responsibility of developing new concepts concerning the application of air power. The general objectives of the course of instruction are to expand the student's capacity as an individual and as a member of a group to analyze, appraise, and develop sound solutions to problems and to gain a more nearly complete understanding of the nature of conflict, the essential elements of strategy, the capabilities and limitations of weapons systems, and the sound employment of air doctrine.

The instructional methods used are designed to increase the scope and depth of the student's thinking and to increase his capacity to treat military problems more objectively and with greater facility and competence. Recognizing that the major problems facing high command and staff officers now and in the future are of such complexity as to require staff action and group solution, the Air Force has designed methods of instruction to educate the student in the fundamentals of thinking as related to any problem, with emphasis on the military problem, and to provide an opportunity for practical application of the fundamentals through solving specific problems in group discussion. Lectures, forums, and conferences are included in the curriculum, in addition to required reading, as basic information and background material for semina. discussion and problem solution. The students meet in small groups, and a member of the seminar is selected to present the group solution and to defend it before the entire student body. There are no school solutions to any of the problems posed.

A large part of the lecture program of the college is devised to present to the students the knowledge, experience, and ideas of leading authorities in the various study areas. Guest lecturers from all phases of civil and military life and from various allied nations contribute to and participate in the guest lecture program.

The current curriculum is divided into three phases. Phase I on international conflict deals with skill in the exchange of ideas through language, the elements of power of the major nation-states, and current world conflicts. Phase II on concepts and employment of air warfare deals with the basic nature of war and the impact on it of new weapons, emphasizing air weapons, with new developments in weapons and equipment which influence military power, with principles and problems of air defense, with strategic air offense, and with the operation of air forces in conjunction with other forces. Phase III on global strategy has to do with current concepts and policies which govern the employment of United States military forces and with practices and policies essential to success in future warfare.

A thesis program constitutes a part of the curriculum. Its objective is to improve the student's writing ability and give him an opportunity to contribute to the general advancement of knowledge on strategy and the employment of airpower. Faculty committees are established to evaluate the theses and recommend disposition. Those theses which contribute to the mission of the USAF are forwarded to Headquarters, USAF, or to field agencies which may be in position to utilize the information assembled or to act upon the recommendations set forth.

On graduation from the Air War College the typical officer is about midpoint in his career, and with his fellow graduates will be largely responsible for the executive direction of the Air Force 10 to 15 years hence. The progressive plan for the professional education of the line officer in the Air Force thus consists of the three general duty schools just described—the squadron officer school, the Command and Staff School, and the Air War College.

It has been pointed out that in each of these three courses the Army and the Navy have representation. In like manner, the Air Force sends officers to schools of the other armed services at corresponding levels.

Institute of Technology

The mission of the Institute of Technology, situated at Wright-Patterson Air Force Base, Ohio, is to provide technological, scientific, and certain other professional education for Air Force officers.

The Resident College of the Institute conducts undergraduate and graduate programs in such fields as aeronautical engineering, armament engineering, electrical engineering, nuclear engineering, engineering administration, and industrial administration. These courses range in length from 1 to 2 years. The student body consists of a carefully selected group of approximately 350 officers, some of whom may have been graduated from one or more of the three general duty courses previously described. Admission to the courses offered in the institute is by individual application, and the requirements for admission vary with each individual course. The programs are designed to meet requirements common to a wide range of officer assignments in the materiel and research and development activities of the Air Force rather than to meet the narrow demands of a particular assignment. Particular emphasis in the research aspect of the instruction is applied to Air Force problems. The teaching staff is composed of both professional civilians and officers. The location of the Resident College at Wright-Patterson Air Force Base makes possible cooperative research in aeronautical engineering programs with the Wright Air Development Center and provides for ready access to classified information and guest lecturers with extensive experience in Air Force materiel and research and development operations.

The Institute is responsible for selecting officers who apply for training in civilian institutions in courses of study having direct application to Air Force needs. These courses are in the engineering and physical sciences, the managerial and social sciences, language and area training, and medical sciences. Many of them lead to undergraduate and graduate degrees. The Institute also is responsible for officers assigned for training within industry.

By an act approved August 31, 1954, the Congress authorized the Commander, Air University, to confer appropriate degrees upon persons meeting requirements for those degrees in the Resident College of the United States Air Force Institute of Technology. The degrees are to be conferred under regulations prescribed by the Secretary of the Air Force, and upon accreditation of the Institute "by a nationally recognized accrediting association or authority."

School of Aviation Medicine

Through the Air University the professional education of Air Force medical personnel is monitored by the Medical Education Division, in the Directorate of Medical Staffing and Education, Office of the Air Surgeon General. Its work includes several types of education which further the professional and technical training of officers of the USAF Medical Service.

Indoctrination.—The newly commissioned medical officer takes an orientation course of 4 weeks in the School of Aviation Medicine, in which the content is a combination of introduction to the military, to the Air Force, and to military medicine. Upon completion of the course, the officer reports to his first duty station in one of the major commands. Selected officers, as determined by field requirements, are assigned to the School of Aviation Medicine at Randolph Air Force Base, Tex., for additional training in aviation medicine.

Aviation medicine.—The primary course in aviation medicine is a 9-week course to familiarize the physician with the basic principles of aviation medicine and the performance of those practices which will qualify him to function effectively as an aviation medical officer at the squadron level. This includes familiarity with the physical examination for flying and those practices which are of critical importance in aviation medicine; the basic sciences, understanding of which is essential in the application and practice of aviation medicine; and those aspects of the clinical specialties in which the prevention, recognition, and treatment of diseases are essential in the practice of aviation medicine. Physiology, ophthalmology, otorhinolaryngology, psychiatry, and flight medicine are key teaching areas.

Advanced course in aviation medicine.—A 47-week graduate course is phase 1 of a 4-year program in aviation medicine leading to the specialty board examination in public health. Phase 2, 1 year in a civilian institution with the degree of master of public health at the end, is followed by the 2-year residency in aviation medicine. This makes the officer eligible for the board examination.

Internships and residencies.—Military interns are found in military and civilian hospitals. The residency program is also maintained in military and in civilian hospitals. Career Air Force medical officers may apply for such residencies as part of their professional advancement. Reserve officers on active duty are also eligible for such graduate training on the basis of extended military duty proportionate to the period of the residency. Within the scope of military requirements for trainees in a given field and capabilities of the applicant, the Air Force has an adequate and extensive residency program. The residency in aviation medicine, previously described, is one of the most important in meeting Air Force medical service needs for it produces the future Flight Surgeons. Residencies in the clinical specialties are maintained so that a complete medical service is available to the Air Force personnel. That continuous growth of medical officers is encouraged is illustrated by the personnel coding system previously described. Each specialty has a code number. A letter suffix denotes the amount of training with that specialty, and duty assignments usually are determined on this basis.

Refresher training.—New discoveries and advances are brought to the medical personnel through an extensive program of short-term and refresher courses at civilian and at military locations. Officers attend on application and/or assignment. In addition, regular publications, training films, and professional conferences are available. Medical officers attend national medical and scientific conventions and thus maintain continued contact with the broad field of their specialty.

Research.—Medical officers have many opportunities in research, either in field situations or at one of the medical research agencies. Basic research in the physiology of flight is conducted at the School of Aviation Medicine and at civilian institutions to which selected officers may be assigned. The Aeromedical Laboratory at Wright-Patterson Air Force Base conducts research in human engineering, and the School of Aviation Medicine directs its research to basic and applied aspects of aviation medicine. Medical officers in hospitals or in Air Force commands often have problems peculiar to flying personnel about which they can conduct research. Advances in aircraft create new problems for flying personnel. The medical officer, particularly the flight surgeon, must be conversant with the problems and the best explanations or solutions to them. Hence, continuous research in aviation medicine, in basic sciences, and in clinical medicine is a keystone in the Air Force medical service.

Correspondence Study

Home-study courses are offered to officers either on active duty or in the various Reserve components. The courses parallel, insofar as possible, the resident course of the Air University Schools previously described. They are written by the instructors in the resident schools and are administered through an Air University organization, the Extension Course Institute. The purpose of the instruction is to afford opportunity for officers who are unable to attend the resident schools to advance their professional knowledge.

Professional Reading

In addition to providing resident schools, on-the-job training, and home study courses, the Air Force encourages its officers to read widely to increase their understanding, knowledge, and information in military and related nonmilitary fields. To this end the Air University annually compiles, and the Air Force prints and distributes, "A Professional Reading Guide for Air Force Officers."[8] The current edition of this guide lists some 250 titles under the following subject grouping: Arctic, Biography, Economics, English, Fiction, Geography, Government and Politics, History and Current Affairs, Military History, Law, Management, Military Thought and Policy, Psychology, Human Relations, Philosophy, and Science. These reading materials are available to officers in Air Force base libraries throughout the United States and abroad.

Air University publishes the *Air University Quarterly Review*, which serves as the professional journal of the USAF. The periodical is edited by the Air University to disseminate advanced thought bearing on air warfare and is intended to stimulate and enrich the thinking of Air Force officers about air strategy, tactics, and techniques. It reflects not only the educational and doctrinal teaching of Air University but also significant positions relating to the broad subject of airpower by experts both within and without the United States Air Force. Its methods are authoritative bylined feature articles, critical and interpretative analyses of Air Force activities, and detailed technical treatments of combat operations. The editor is an Air Force officer responsible to an Air University Editorial Board made up of representatives of the commander and of the commandants of various Air University schools and activities.

The *Quarterly Review* has been published since 1947. It is generally recognized as an authoritative military journal. It is translated and published in Spanish and Portuguese by the Air University for official USAF use in Latin America.

The Air University Library is the professional library of the Air Force. It is manned by professional librarians, and in the field of airpower and its application its holdings are unique. Students use the library extensively, and after leaving the Air University they call on its resources. Aside from its extensive book collection, the library and its branches house over a half million documents and a quarter million maps. It subscribes to over a thousand journals.

The Research Studies Institute of the Air University offers a rich research resource to students in the field of escape, evasion, and survival materials and in military history.

Joint Education

In addition to the professional schools and facilities of the Air Force, there are three colleges operated by the Joint Chiefs of Staff which are attended by Air Force officers. These colleges are described in chapter 32.

Conclusion

The United States Air Force has a major responsibility for the defense of the country. The professional training and education of the career officers who man this arm is a grave responsibility. Those officers who are charged with this responsibility utilize advice and constructive criticism and are constantly experimenting to find more efficient methods and procedures for use in the schools. The chief concern is that sufficient percentages of qualified officers be allowed to attend the schools in order that they may be fully prepared to discharge their responsibilities as they progress through their professional careers.

At the conclusion of World War II, the Assistant Secretary of War gave the following appraisal of the career officer:

"It seems to be an open season for attacks on the Army and the 'Army mind.' * * * I often wonder if these critics have any conception of the scope and difficulty of the tasks which the professional officers are called on to undertake in the course of their careers. * * * I know of no industry or pursuit in which ingenuity, skill, knowledge of different techniques, judgment, and above all, imagination are required in greater measure and variety than in the planning and conduct of modern warfare. * * * In the execution of their plans, many of them had to undertake political and social tasks abroad of the most exacting and abstruse nature. * * * I can testify that it was the regular Army and Navy officers, and they alone, who gave the executive direction to the conduct of the war. * * * One could list many evidences of first-class thinking, such as the development of new and decisive concepts of airpower, particularly in the field of strategic bombing and carrier employment * * * when one analyzes the peacetime training of the regular services the reasons for such results emerge. The officers of the Armed Forces are made up principally of two groups of men—those who were selected through the highly democratic appointment process for admission to West Point and Annapolis, and those who from the ranks or the reserve elected to make the Army or the Navy a career. Following their initial general education they are forever going to schools and they continually are being tested in schools long after the normal civilian has ceased his studies. * * * They are constantly engaged in the practice of teaching others what to do and how to do it."[8]

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[8] *Air Force Pamphlet 36-5-1, 1953-1954.* Department of Air Force, Washington, D. C.

If the Air Force is called to defend this country, it is the fervent hope that the educational system just described will have prepared the new generation of air officers to measure up to the task before them.

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35. Education of Coast Guard Officers

By CAPTAIN G. F. HICKS, USCG*

THE UNITED STATES COAST GUARD performs both civil and defense functions. In some form it has been in existence for more than 160 years. The education of the men in the Coast Guard has passed through various stages; it is now organized on the university level and follows the general pattern of professional education. The discussion of education and training in this chapter is limited to the work of the United States Coast Guard Academy and to the education of commissioned officers of the regular establishment.

The Coast Guard

The United States Coast Guard had its origin in the act of August 4, 1790, which was passed on the recommendation of the Secretary of the Treasury, to provide a service afloat, military in nature, for the purpose of enforcing the Revenue Act of July 31, 1789. The organic act called for "the establishment and support of ten cutters" and a professional corps of commissioned officers which by virtue of their being commissioned would "attach them to their duties by a nicer sense of honor."

Forty officers (a master, a first, a second, and a third mate for each of the 10 cutters) were authorized in the basic act, which named them "officers of the customs" to give them the legal powers requisite to the performance of their duties. The senior officer of the corps thus created was Hopley Yeaton of New Hampshire whose commission, dated March 21, 1791, was the first issued by President George Washington to any officer afloat.

From this origin, the Coast Guard (called the Revenue Cutter Service until 1915) has grown to its present size of approximately 28,500 officers and men. Through acts clarifying the organic act of 1790, through assignment of duties by other acts and by Executive orders, and through amalgamation with other services, its duties have expanded until they now include: Enforcement of all applicable Federal laws upon the high seas and waters subject to the jurisdiction of the United States; development, establishment, maintenance, and operation of aids to maritime navigation, icebreaking facilities, and rescue facilities for the promotion of maritime safety; establishing and enforcing standards of safety for merchant vessels of the United States; operation of ocean weather stations; maintenance and operation of search and rescue facilities; maintenance of Bering Sea Patrol and International Ice Patrol; cooperation with other bureaus and departments of the United States Government for the detection of frauds and violations of the customs laws of the United States; and maintenance of a state of military readiness to assist in the defense of the United States.

Coast Guard Academy Established

When the act which established the Revenue Cutter Service (Coast Guard) was passed in 1790, no thought was given to the problem of officer personnel. In fact, no problem existed at that time. There was abundant material from which to draw: men who had served in the merchant marine and the Continental Navy and who were eminently qualified for the dual civilian and military role which was required of an officer in the Revenue Cutter Service.

The system of appointing candidates to commissioned rank in the service was established by the act of July 31, 1876, which required that vacancies in commissioned rank be filled from a group of cadets who, after selection through competitive examination, were to serve a probationary period of 2 years. Under this act a "School of Instruction" was established at New Bedford, Mass., where systematic training in academic subjects was given during the winter months. Practical training on long cruises during the summer months supplemented the academic program.

This arrangement continued until 1891 when the school at New Bedford was abandoned and a series of experiments were started. For a few years, vacancies in the service were filled by appointment of graduates from the Naval Academy; next, the school at New Bedford was reestablished; shortly after this, the school at New Bedford was again abandoned, and cadets were trained on a practice vessel which cruised throughout the year.

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In 1906, the school was again established on shore at Arundel Cove, Md. It remained there until 1910, when it was moved to Fort Trumbull at New London, Conn. In 1932, a complete new academy was constructed on the west bank of the Thames River above New London, and the school was moved to this location.

Today the main source of commissioned officers in the Coast Guard is the Coast Guard Academy.

The Coast Guard Academy is accredited by the Engineers Council for Professional Development. It is a member of the American Society for Engineering Education and the New England Association of Colleges and Secondary Schools, and the National Education Association.

Admission to the Coast Guard Academy

Entrance to the Coast Guard Academy is solely through competitive examination. The examinations are prepared by the Educational Testing Service, Princeton, N. J. They are on a college entrance level, but are modified somewhat to meet the particular needs of the academy.

The examinations are given in February of each year throughout the United States and its possessions. In a typical year, approximately 2,000 young men apply for permission to compete in these examinations. Of this number, approximately 1,400 are authorized to compete, the remainder being eliminated through lack of proper qualification, that is, age (the candidate must be between 17 and 22 years of age), marital status (he must be unmarried), physical deficiency, or unsatisfactory academic background. Of the 1,400 authorized to compete, approximately 1,000 complete the examinations. Cadet appointments are tendered to the top men of this group, in order of their standing.

The fourth (freshman) class of approximately 200 enters the Academy in the first week of July of each year. Approximately 50 percent of this number will graduate 4 years later. The losses are attributable to a number of causes, the primary ones being academic failure, lack of ability to conform to standards of discipline, and lack of aptitude for a service career.

Academy Curriculum and Degree

The term of cadetship was 2 years until 1903, when it was increased to 3 years.

In 1906 provision was made for recruiting cadet engineers from graduates of engineering schools. They served as cadets for 6 months (later increased to 1 year) before they were commissioned. This system obtained until 1923 when a 3-year course was established for cadet engineers.

In 1926 the line and the engineering corps of the service were amalgamated, and a balanced curriculum of line and engineering subjects was established. In 1934, the term of cadetship was increased from 3 to 4 years.

The curriculum of the Coast Guard Academy, 4 years in length, is broad in scope and carefully balanced to provide the necessary basic technical training for a service career and the cultural background required and expected of an officer. The 152 semester hours of credit are distributed among the various broad categories as follows: (1) Humanities, 34 semester hours, including English composition, history, literature, economics, geography, and government; (2) science, 23 semester hours, including physics, chemistry, and nuclear physics; (3) mathematics, 23 semester hours, including plane and spherical trigonometry, calculus, analytical geometry, and analytical mechanics; (4) engineering, 43 semester hours, including descriptive geometry and drawing, electrical engineering, electronics engineering, engineering materials, strength of materials, thermodynamics, fluid mechanics, naval architecture, and power engineering; and (5) professional subjects, 29 semester hours, including ordnance and gunnery, law, communications, seamanship, navigation, meteorology, astronomy, and administration and leadership.

The curriculum outlined above is exclusive of the practice cruises and the summer training programs to which 40 weeks of time is devoted in the 4 years. During the summer while at sea upper classmen serve as officer of the deck, engineering officer of the watch, master at arms, and, under a minimum of supervision from the commissioned officers, actually run the training ships. The cruises take the cadets to many ports of the world thus making of the men well-traveled individuals with a cosmopolitan outlook befitting one who serves his country in the varied capacities of a Coast Guard officer.

The academy awards the degree of bachelor of ience (general engineering). For numbers of de-ees conferred in recent years see table 71.

The curriculum is under continuous surveillance. ch year a board composed of department heads rveys the curriculum and makes such recommendaons as will in its judgment keep the instruction in ace with advances in technology. These recomendations are submitted to the Academy Advisory ommittee for its consideration and recommendation rior to being placed in effect. The Academy Adisory Committee is composed of seven persons of stinction in education and other fields, appointed y the Secretary of the Treasury for the primary urpose of examining the course of instruction and dvising the commandant. The committee meets t least twice each year. The members serve without pay.

Academy Curriculum Problem

The planning of an adequate, balanced curriculum t the undergraduate level is by far the most diffiult problem at the Academy. Advances in techology and complications in the administration of ervice affairs make it mandatory that a high perentage of officers specialize in some field. Thereore, it is necessary that the curriculum be so devised hat adequate education and training are provided s a background for proper performance of routine uties and in addition as background for those who ill in time pursue graduate work in one of the many pecialty fields.

The problem is complicated by the fact that all ust pursue the same course of study at the Academy ince it is not known which graduates will be selected or specialization until 3 to 6 years after they have een commissioned. Further complications arise ecause the course of study is only 4 years long and ecause entrants to the Academy cannot be conidered properly prepared, particularly in matheatics and English, to pursue the undergraduate ork, in spite of the utmost care exercised in the election of those entrants.

It is doubtful whether this problem will ever be olved with complete satisfaction. Reasonably good esults are obtained by checking the progress of raduates and making adjustments in the curriculum o correct apparent deficiencies.

Academy Teaching Staff

The instruction staff at the Academy is composed f commissioned professors, civilian instructors, and commissioned officers. The commissioned professors and civilian instructors form the permanent staff; the commissioned officers, the rotating staff. The normal tour of duty of the commissioned officers as instructors is 4 years. All professional subjects are taught by the rotating staff. The permanent staff forms the nucleus of instructors in the humanities, sciences, and mathematics.

Graduate and Postgraduate Education

The advances in technology and the widespread responsibilities of the Coast Guard make it essential that the education and training of its officers continue throughout their service careers. This education and training is of three forms: study for promotion examinations; graduate study at various colleges and universities; and specialized training in service operated schools.

Study for promotion examinations.—In 1953 a system of promotion examinations was set up requiring all general duty officers, except permanent captains, to pass written examinations in specified subjects before they are eligible for promotion to the next higher grade. The subjects of the courses which must be completed, and of the examinations, are:

For promotion from ensign to lieutenant (junior grade): Elements of naval machinery; marine navigation, part I; seamanship; shipboard electrical systems; and naval electronics, part I.

For promotion from lieutenant (junior grade) to lieutenant: Communications officers course; marine navigation, part II; naval electronics, part II; elementary accounting; elementary supply; ordnance and gunnery; and military justice.

For promotion from lieutenant to lieutenant commander: Practical damage control; diesel engines; search and rescue; aids to navigation; merchant marine safety; and law enforcement.

For promotion from lieutenant commander to commander: Travel and transportation; administration; supply, general; aviation, USCG; theoretical damage control; leadership; and budgetary administration.

For promotion from commander to captain: Personnel administration; foundations of national power; and strategy and tactics. The last three are correspondence courses which must be completed, but on which no examination is given.

Promotion examinations are given every 4 months. The officer is permitted to choose the subject or subjects in which he is to be examined each period. He may fail each subject once. A second failure in the same subject automatically places him out of line of promotion.

There are ten categories of special duty officers. These are: Deck; marine engineer; electrical engineer; electronics engineer; communications; civil engineer; aeronautical engineer; aviator; naval architecture; and finance and supply. Special duty officers are examined for promotion in the same manner as general duty officers. The subjects in which they are examined are in line with their specialty. Special duty officers are not eligible for promotion to the rank of captain.

Graduate study.—At the present time graduate study in 13 curriculums is provided for selected officers. The number of curriculums in which officers receive instruction is fairly stable from year to year. The number of officers receiving instruction in each curriculum varies from year to year, depending on the needs of the service and the availability of officers.

Officers are selected for graduate study on the basis of their service record, academic record, and general aptitude for the field of the curriculum. They are usually of the rank of lieutenant commander and below, with preference being shown for the younger officers.

Pertinent information concerning the various curriculums follows:

1. Accounting: A 2-year course at Benjamin Franklin University, leading to a bachelor's degree for those who qualify.

2. Business administration: A 2-year course at Harvard University, leading to a master's degree for those who qualify. Applicants for this course must have at least 6 years of commissioned service.

3. Civil engineering: A 17-month course at Rensselaer Polytechnic Institute leading to a bachelor's degree.

4. Communication: A 1-year course at the U. S. Naval Postgraduate School.

5. Electronics engineering: A 2-year course at the Massachusetts Institute of Technology leading to a bachelor's degree.

6. Engineering physics: A 3-year course, 1 year at the Massachusetts Institute of Technology and 2 at the University of Rochester leading to a master's degree.

7. Engineering sciences (Aeronautical): A 2-year course at the Air Force Institute of Technology.

8. Law: A 3-year course at George Washington University, Harvard University, or Yale University leading to a bachelor's degree.

9. Management and industrial engineering: A 1-year course at Rensselaer Polytechnic Institute leading to a bachelor's degree.

10. Naval construction and engineering: A 3-year course at Massachusetts Institute of Technology leading to a master's degree.

11. Nuclear engineering (effects): A 2-year course at the U. S. Naval Postgraduate School.

12. Ordnance engineering: A 2-year course at the U. S. Naval Postgraduate School.

13. Personnel administration and training: A 1-year course at Stanford University leading to a master's degree.

All officers receiving graduate training must obligate themselves not to resign from the service during the time they are in school and, after graduation, to serve a minimum of 1 year for each semester they have been in school.

Specialized training in service operated schools.—Schools operated by the Armed Forces of the United States are employed for specialized training of officers. The courses offered at these schools cover all types of specialization essential to the operation of the Coast Guard. They include: Comptrollership, economic mobilization, strategy and tactics, aids to navigation, flight training, aviation maintenance, merchant marine safety, and naval justice. In all, 50 specialization courses are available. The time spent in any given school ranges from a few weeks to 16 months.

Officers are selected for specialized training on the basis of personal desire, aptitude, service record, and service needs.

At the present time approximately 5 percent of all officers are receiving graduate or specialized training. This number is the minimum required to meet the needs of the Coast Guard. An increase in this number would be highly desirable in order that more flexibility in the assignment of duty stations might be obtained. However, it is doubtful that the availability of officers for specialized training will ever permit this increase.

Perhaps, at some future date, diversity of duty d technical advances will make it mandatory that ll officers be trained in some specialty. There is no oubt that if and when that time arrives, a satisfacory solution to the problem will be found.

ble 71.—Enrollments in, and bachelor's degrees conferred by, the U. S. Coast Guard Academy in recent years

Year	Fall enrollment	Bachelor's degrees conferred
39-40	[1] 208	----------
41-42	[1] 326	----------
43-44	[1] 357	----------
45-46	[1] 279	----------
47-48	345	52
48-49	406	57
49-50	428	68
50-51	490	63
51-52	565	77
52-53	519	86
53-54	526	90
54-55	468	----------

Cumulative for the year.
ource: Data reported to the Office of Education.

Enrollments

In the past 10 years the enrollments of the U. S. Coast Guard Academy have ranged from 279 to 565. (See table 71.)

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36. Education of Merchant Marine Officers

By LIEUTENANT EVERETT H. NORTHROP, USMS*

FREIGHTERS, tankers, reefers, passenger liners—over 1,300 of these oceangoing vessels make up the ships of the United States merchant marine. Added to these are the many ships and boats on the Great Lakes, the rivers, and the coastwise waters. In addition to these vessels, which are privately owned and operated for the most part, there are about 210 vessels in the nucleus fleet of the Military Sea Transportation Service operated by the United States Navy.

These vessels must be manned by officers who are well trained. The education of officers for the merchant marine is conducted by both public and private agencies. The United States Merchant Marine Academy at Kings Point, N. Y., and four State maritime schools offer programs at the college level. Several so-called "license prep" schools, privately run, give professional training somewhat similar to technical courses in adult education programs.

The Merchant Marine

Although there is no definite date for the establishment of the United States merchant marine, there seems always to have been a merchant marine to play a vital part in American history. Perhaps it can be said that the United States merchant marine was launched in 1607 when colonists under Captain George Popham built the 30-ton pinnace *Virginia* at the mouth of the Kennebec River, Maine, and sailed it to England. Coastwise commerce and even voyages to England were begun by the Pilgrims and the Puritans very soon after they arrived on these shores.

During the Revolution armed merchant ships called privateers took over the functions of an American Navy, which was almost nonexistent. These merchant fighters captured 600 British vessels to help hasten the end of the war. The merchant ships also played a leading role in the War of 1812.

In 1819 Captain Rogers and the *Savannah* made history in the first crossing of the Atlantic with the help of a steam engine. This event is celebrated every May 22 as National Maritime Day.

The high tide of American glory on the seas was the clipper-ship era in the 1850's. But these speedy and daring vessels became only glorious memories after the Civil War as the United States turned from the sea. Occupied with westward expansion and the development of internal resources, the United States so neglected the merchant marine that the American flag almost disappeared from the ports of the world. In 1898 there were not even enough ships to transport 25,000 men to Cuba in the Spanish-American War. In 1907 foreign ships had to be chartered to carry the supplies for the round-the-world tour of American warships.

World War I made necessary a "bridge of ships" to carry troops and supplies, and with almost no ships in the merchant marine, an expensive building program was undertaken. In 1936 the Congress passed the Merchant Marine Act setting up a policy fostering the development and encouraging the maintenance of a merchant marine for promoting commerce and aiding the national defense. A limited number of large vessels were built which provided a nucleus of military transport for World War II. However, the great need for ships in this war again resulted in an extensive shipbuilding program that turned out 5,000 merchant vessels. This program also produced the ships which carried 80 percent of the cargoes to Korea and which participated in the epic evacuation of Hungnam.

The Merchant Marine and National Defense

This capsule history of the American merchant marine has already pointed out the importance of the merchant marine to national defense. In peacetime the ships of the merchant marine bring to the country, among other things, stockpiles of essential materials for defense. In war, the United States merchant marine becomes the fourth arm of defense. This indispensable service carries troops, guns and ammunition, and food and equipment to the fighting fronts. The Navy, Air Force, and the motorized units of the Army could not move without the oil supplied by the tanker fleet.

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In World War II, American merchant ships carried more than 7 million fighting men and 268 million tons of cargo. Three out of four tons of the supplies necessary for victory were delivered by American merchant ships. Over 600 ships and 6,000 merchant seamen were lost in action. In 1944, President Eisenhower, then Allied Commander, said, "When final victory is ours, there is no organization that will share its credit more deservedly than the American merchant marine." His words have been echoed by other important voices. The equally vital role which sea transportation will play in any future war has been pointed out by many authorities.

The Merchant Marine Officer

The organization of a merchant ship varies somewhat with the particular ship, but the general picture is as follows. The officer in command of the ship is the master. Under him there are two operating departments, deck and engine. The deck officers are the first or chief officer and the second and third mates. The engine department is headed by the chief engineer, who has under him the first, second, and third assistant engineers. These are the main ranks, but a large vessel will have additional officers.

Deck officers perform the following functions: The navigation of the vessel; the loading and discharging of the cargo; the overhauling and maintenance of the hull, the superstructure, and the compartments used for carrying cargo; and the maintenance of the safety organization of the vessel.

The engineers are responsible for the operation and maintenance of everything mechanical aboard ship, including the propelling and auxiliary machinery, the electrical system, the boilers, and the refrigeration and cargo-handling equipment.

The number of deck and engine officers in the service varies with the number of merchant ships in use. At present it is estimated that about 13,000 officer berths are available in the American merchant marine. In addition to the number of officers actively serving aboard ship, there is a reserve of experienced officers holding current licenses upon which the country can draw in time of crisis.

Included among ships' officers are the pursers and surgeons, called staff officers, and the radio officers. These are special billets, with varying qualifications of training and experience, and are not considered in this article.

Need for Professional Education

Professional education for the modern merchant marine officer has developed for several reasons:

Technological advancements.—Almost 350 years of technological development is reflected in the difference between the 30-ton pinnace *Virginia*, with its capacity of 45 colonists, and the 48,000-ton superliner *United States*, with its capacity of 3,000 (14,000 as a troopship). During that period sail gave way to steam, and then the reciprocating engine to the steam turbine. Oil and gas, even atomic propulsion, are encroaching on steam. On the bridge the officer needs to know how to use not only the magnetic compass and the sextant but also the gyrocompass and the new navigational aids such as loran and radar. The merchant marine officer must be trained to accept immediately all the responsibilities of a watch officer, and this includes a knowledge of all the latest technological developments which apply to his work.

Increased safety for passengers, cargoes, crews, and ships.—Marine disasters in the 1930's, like the *Morro Castle* fire, revealed deficiencies in the qualifications of seamen and brought about renewed efforts for an adequate officer-training program. The safety of the ship has been increased by the new navigational devices, and the responsibility of safeguarding the ship should not be entrusted to men unfamiliar with their operation. Congressional belief in the importance of the merchant marine to the national welfare is indicated by many legislative measures, including the provision of subsidies for building and operating merchant ships. Requiring qualified personnel to man these ships is a measure to protect the investment which the country has made in these ships.

Increased contribution to the national defense.—The better the training, the finer the merchant marine officer, and the greater the contribution which that officer can make to national defense. Merchant mariners from John Paul Jones on have served in the Navy in time of need. Today's merchant mariners should have naval training so that they can serve equally well in either arm of defense as necessary.

National pride in the merchant marine.—The world's finest ships should have the world's finest officers. Most of the foreign countries which are competing with the United States in carrying the cargoes of the world have officer-training systems. As a matter of fair competition as well as national pride in the merchant service, the officers of the United States merchant marine should be equal, if not superior, to officers of foreign merchant services.

Modern conception of the merchant ship's officer.—Today's merchant officer should be a loyal American, fully aware and proud of his country's history and traditions and endowed with the will to protect them. In the ports of the world he should represent the United States as unofficial ambassador. He should be an educated and informed citizen, prepared to take his place as a valuable member of society. This means that to his technical education should be added that general education which will fit him for these responsibilities. After a number of years at sea some ships' officers are promoted to administrative positions ashore. Instruction in shoreside operations provides the ship's officer with an understanding of the shipping industry and a background of commercial knowledge.

Sources of Officers

Citizens of the United States are admitted to service as officers in the American merchant marine upon passing a license examination administered by the United States Coast Guard. Candidates "sit for" their licenses at various examination centers, and unless "set down" by the Coast Guard inspectors they are granted an original license as third mate or third assistant engineer.

The license examination, which is on professional subjects only, ordinarily takes about 5 days. The passing grade ranges from 70 percent in each of the general subjects to 90 percent in Navigation and Rules of the Road. Separate licenses for engineers on steam and diesel vessels are issued, and the license is further limited by horsepower. There are also different licenses for deck officers, depending upon tonnage and the waters on which they are preparing to sail: Ocean; coastwise; Great Lakes; rivers; bays, sounds, and lakes other than the Great Lakes.

One may qualify in several ways for admittance to the license examination: (1) Graduation from the United States Merchant Marine Academy; (2) graduation from 1 of 4 State maritime schools; (3) experience at sea in an unlicensed deck or engine position for 3 years; and (4) graduation from the United States Naval Academy or the United States Coast Guard Academy, or graduation from an accredited course in marine, electrical, or mechanical engineering, after some experience at sea. The number of men in the last-named group who go to sea in the merchant marine is negligible and will not be further considered here.

At present, about 1,500 original licenses are issued every year. Nearly 200 come from the Federal Academy, 200-plus come from the 4 State schools, and about 1,050 come up from the unlicensed ranks.

United States Merchant Marine Academy

Just as the Federal Government has realized a responsibility for the provision of an adequate American merchant marine, so it has recognized that the preparation of qualified officers is part of that responsibility. It therefore established a national system of training merchant marine officers which resulted in the founding of the United States Merchant Marine Academy, now operated by the Maritime Administration, an agency of the Department of Commerce.

The United States Merchant Marine Academy has been developed over the years since 1891, when Congress required the carrying of cadets aboard mail contract ships. In 1931 the National Conference on the Merchant Marine conducted a survey of officer training, and the response from nearly 6,500 persons indicated a great need for a national system of training. In 1935 the Interdepartmental Committee on Shipping Policy recommended the establishment of a national merchant marine academy. On March 15, 1938, the Government took over the company cadet system and established the United States Merchant Marine Cadet Corps. Temporary shore establishments were used until the present site at Kings Point, Long Island, was selected in 1941. The Academy was established in January 1942 and dedicated on September 25, 1943.

The applicant for appointment must meet the following requirements: (1) Be a male citizen of the United States, native born or naturalized; (2) be unmarried; (3) be not less than 16½ and not yet 21 years of age; (4) produce evidence of credits from accredited schools consisting of 15 units as follows: 2 in mathematics (including 1 in algebra, 1 in plane geometry); 3 in English; 1 in science (except biology); 9 electives; (5) take the competitive scholastic test held throughout the country and qualify for available appointments which are apportioned on the basis of State quotas.

Each successful candidate must qualify for and receive an appointment in the United States Naval Reserve. This includes passing a Navy physical examination. When an applicant has been selected, he is provided with transportation to the Academy, uniforms, and textbooks, as well as tuition, quarters, subsistence, and medical and dental care.

The wartime curriculum taught the minimum essentials and trained officers in the shortest possible time. After the war the Academy established a 4-year technical college curriculum. The Academy was accredited in November 1949 by the Middle States Association of Colleges and Secondary Schools.

The professional courses at Kings Point are designed to graduate a ship's officer who will operate today's merchant ship efficiently and economically. In addition, the Academy aims at graduating a first-class Naval Reserve officer and a cultured gentleman who will be an intelligent American citizen and a leader afloat or ashore. To meet these aims, the Academy offers courses in naval science, in the humanities, and in the physical and the social sciences.

After students have completed a year of basic training at the Academy, they are assigned to selected merchant ships for a year's intensive training at sea. Projects are assigned to them during this period. Their third and fourth years are spent at the Academy in advanced study in deck or engineering courses, depending upon the students' choice and qualifications. Courses such as physics and navigation, electronics and astronomy, steam, diesel, and electrical engineering as well as languages, history, and shipping management round out their 4 years of education. Along with this goes physical conditioning and military discipline.

Upon graduation, the cadet-midshipman receives commissions as ensign in the United States Naval Reserve and ensign in the United States Maritime Service. He receives a bachelor of science degree and a Federal license as third assistant engineer or third mate.

The present enrollment at Kings Point is 700 cadet-midshipmen, with an additional 200 in training at sea. The total number of graduates since the establishment of the Cadet Corps stands at more than 10,000.

Since 1948 the Academy has had the assistance of an Academic Advisory Board consisting of seven distinguished educators who meet at the Academy annually, usually in the spring. The group has included retired superintendents of other service academies and presidents, deans, and professors from liberal arts and technical institutions. It has been charged by statute with the job of "examining the course of instruction and advising the Superintendent thereto." It has interpreted its mission broadly and has given generous help on all the educational problems which face a developing institution.

State Maritime Schools

At present four States sponsor schools which prepare men to take the license examinations: New York, Massachusetts, California, and Maine. The New York Maritime College is the oldest of the four, the State having taken over in 1913 the nautical school which the city of New York had founded in 1875. The Massachusetts Maritime Academy was founded in 1893; the California Maritime Academy was founded in 1929; and the Maine Maritime Academy was founded in 1941. The States of Washington and Pennsylvania also had schools at one time but have discontinued them.

The State schools have been assisted by the Federal Government throughout their existence. The first schools were founded under the encouragement of an 1874 act which provided to certain specified ports a naval vessel for marine training. The first schools, with a 2-year course aboard the "schoolship," were for the training of seamen, but so successful were the graduates as a result of the training that they soon became officers, and the State nautical schools have been considered officer-training institutions ever since. In 1911 Federal legislation provided for each school to be given an annual Federal grant of $25,000, and in 1941 an additional amount up to $25,000 in payment for the tuition of out-of-State students. In 1942 they were given sums for pay, quarters, and subsistence of students. The Federal Government has prescribed minimum standards to which the State schools must conform in order to qualify for Federal aid.

The educational aims of the State and Federal schools are the same, but they differ in method and content in some respects. Instead of the sea year of the Federal system, the cadets at the State schools get their sea experience through 3-month cruises annually aboard the ships furnished by the Government of the United States. The cadets operate all departments of the ship under professional instructors.

The course at the New York Maritime College is 4 years, as at the United States Merchant Marine Academy; that at the other three schools, 3 years.

All cadets at the United States Merchant Marine Academy are in the Naval Reserve and take naval science courses which qualify them for Naval Reserve commissions. Not all of the cadets at the State schools are in the Naval Reserve; those not in the Naval Reserve do not receive commissions on graduation.

Noncollegiate Training

Although programs of professional education are available at the United States and State Merchant Marine Academies, the traditional right of an unlicensed member of the deck or engine departments to rise "through the hawse pipe" to an officer's billet is still maintained. In the engine department the seaman begins service as a coal passer or a wiper. After 6 months he may take an examination to qualify as a fireman, watertender, oiler, unlicensed junior engineer, machinist, refrigerating engineer, electrician, or deck engineer. After 3 years' service in the engine department and after gaining the necessary experience and knowledge, he may take an examination for third assistant engineer. The entry rating in the deck department is ordinary seaman. After serving 1 year in most cases, the ordinary seaman may take examinations for able seaman (A. B.), including lifeboatman. After the seaman has been certified as A. B., petty officer jobs such as quartermaster or boatswain become available to him. After 3 years' service in the deck department, he may take the third mate's examination.

Facilities for the professional training of the unlicensed man—refresher, upgrading, and prelicense courses—have been maintained by both private and public sources. Until recently the United States Maritime Service, established in 1938, maintained correspondence and resident courses which unlicensed seamen could take to advance themselves in rating or to prepare themselves to take the license examinations. License "prep" courses are available in private schools at various ports and at the Seamen's Church Institute of New York. This type of training aims only at preparing a student to pass the specific subjects included in the examination. It does not equal the content of the technical courses of the professional maritime colleges and does not contain any of the other values of a college program.

Advancement in Officer Ranks

After 1 year at sea a third engineer or third mate can take the examination for second engineer or second mate. After 1 year's service as a second, or 2 years' service as a third while holding a second's license, he may take the first's examination. After 1 year's service as a first, or 2 years' service as a second while holding a first's license, he can obtain the license as chief engineer or master.

The officer is pretty much on his own in educati
himself to pass the examinations. There is no form
program of postgraduate training available. At o
time the United States Maritime Service offered
fresher and prelicense courses to help officers ra
their licenses. There are available private upgradi
schools and the Seamen's Church Institute to whi
an officer can turn for help in preparing himself
a higher license.

Another kind of professional education should
mentioned here. Those officers who are members
the United States Naval Reserve have available
them many educational opportunities: correspon
ence courses; active duty aboard naval vessels,
cluding those of the Military Sea Transportati
Service, regular active duty courses; special cour
for merchant marine officers, for example, the M
chant Marine Reserve Officer Training Facility
Jersey City, N. J., which provides an 8-week orien
tion course to merchant marine officers who hold
serve commissions but who have never had regu
naval science courses. Those officers who are me
bers of units attend regularly scheduled meetin
listen to speakers, and participate in group edu
ional activities. Certain of the largest ships h
units consisting solely of officers aboard the sh
As of June 30, 1954, 189 merchant ships were w
ranted to fly the Naval Reserve flag for merch
vessels. This signifies that the master and not
than 50 percent of the other licensed officers are me
bers of the Naval Reserve. All these opportuni
prepare the officer for naval rather than merch
marine service, but there is some carryover value

Professional Associations and Periodicals

There are no professional associations compo
entirely of merchant marine officers. The irregu
periods ashore and the large amount of time sp
at sea make it difficult for ships' officers to orga
and participate in professional organizations.

Membership in certain professional associati
is open to merchant marine officers. Organizati
which encourage the participation of deck
engine officers are the Society of Naval Architects
Marine Engineers and the United States Na
Institute. The Society of Naval Engineers is o
to engineering officers, and the Institute of Navi
tion is open to deck officers. Most shipping asso
tions are trade associations to which the shipp
companies and the representatives from their sh
side executive departments belong.

Ships' officers associate with the members of their professional group through the unions to which they belong. Although representatives actually of management, the officers are strongly organized into unions which govern the hours, salaries, and conditions of work through contracts with the shipping companies. The largest deck officers' union is the National Organization of Masters, Mates and Pilots of America (American Federation of Labor), and the largest engineers union is the National Marine Engineers' Beneficial Association (Congress of Industrial Organizations). There are other smaller unions for both deck and engine officers.

Just as there are no professional associations of shipboard officers, there are no professional magazines which can be said to be truly theirs. Union journals and house organs published by shipping companies are read by many officers. However, for the most part, maritime magazines are addressed to the shipping industry and are read only incidentally by officers aboard ship. These magazines contain shipping news, editorials, announcements of new products, speeches extracted and reprinted, and feature articles on various technical subjects, but often these do not interest the shipboard officer. At one time the United States Maritime Service sponsored *Mast Magazine* for members of that service, and copies were distributed to officers and men aboard ship.

Maritime Schools and Enrollments

The names of the 5 maritime schools are given below. The figure following each name indicates the 1953 fall enrollment.

CALIFORNIA

California Maritime Academy, Vallejo, 180

MAINE

Maine Maritime Academy, Castine, 224

MASSACHUSETTS

Massachusetts Maritime Academy, Buzzards Bay, 179

NEW YORK

State University of New York Maritime College, Fort Schuyler, 526

U. S. Merchant Marine Academy, Kings Point, N. Y., 738

Total enrollment, 1,847

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O'Connor, John J., Jr. *Opportunities in the Merchant Marine.* New York, Vocational Guidance Manuals, 1953. 160 p.

O'Neil, Comdr. E. F., USNR. Training Reserve Officers of the Merchant Marine. *Naval Training Bulletin*, May 1953. 3 p.

Tyarks, Frederic E. *and* Roy L. Pepperburg. *How To Get a Job on a Ship.* 3d revised edition. Greenlawn, New York, Harian Publications, 1949. 44 p.

U. S. Coast Guard. *Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel.* Washington, U. S. Government Printing Office, 1951. 82 p.

Catalogs and other informational materials are available upon application to the U. S. Merchant Marine Academy and the four State schools.

Appendix: The Professions in the U. S. Census

By SAMUEL A. KRAMER*

THE FIRST CENSUS in the United States was taken by the State Department in 1790, but occupational data were not included. In 1820 and 1840, workers were shown according to broad groups, and specific jobs could be determined only by inference from details given in the Census of Manufactures. One of the 1840 groups covered professions, but it was too generalized and all-inclusive to be meaningful. However, by 1850, categories were established for architects, authors, clergymen, dentists, druggists, editors and reporters, engineers, lawyers, musicians and music teachers, oculists, physicians, professors, surgeons, teachers, and veterinarians. Only free males were counted, but in 1860 the enumerators were instructed to show all "free persons," which may have included females. From 1870 to the present time, women have been listed separately in occupational publications of the census.

The production of all occupational statistics has many inherent problems, some being of long standing. From the first training of enumerators, to responses, clerical editing and other handling, machine processing, tabulation, classification, and final publication of results, there are many chances for errors and misinterpretations. In 1850, the census director complained, "The occupations are not distinguished in a manner calculated to result in any correct conclusions. * * *"[1] This is not serious, since the problem has long been solved satisfactorily. The difficulties in the interpretation and use of census data must be carefully considered at all times. These considerations make it necessary to understand that census data should be regarded as indicating trends rather than numerically accurate figures.

It is difficult to describe so complex and fluid a characteristic as occupation, since the concepts and contents are constantly changing. Groups are not discrete units, and there is much overlapping in the descriptions of work. However, some classification is essential, since the Census Bureau could not list separately more than 35,000 different jobs. At each census period, the system must be reviewed because new occupations appear and old ones are eliminated. In establishing the professional categories, an important consideration is the applicable licensing or accreditation procedure, as well as other indications of social acceptability.

Census officials must decide which occupations should be established as separate categories and which should merely be part of these selected units. The number of persons is only one factor in this determination. Perhaps of greater significance is the question of social need for the data. Obviously, if a group is considered sufficiently important to be studied in various aspects, separate data should be furnished. Sometimes this is not feasible, as in the attempt to make a distinct class of "certified public accountants," when census returns did not identify different types of accountants. Although early records are inadequate, it is interesting to note that, in 1850, "veterinarian" was given a separate line with only 46 practitioners; and "chiropodist" appeared in 1860 with 5 persons, increased to 65 in 1870, and then disappeared. Did chiropodists join the ranks of the physicians in subsequent years? "Religious, charity, and welfare workers" was a printed line until 1930, when it became two lines, "Religious workers" and "Social and welfare workers," largely due to the need for statistics concerning the latter group of professionals.

It is necessary to determine the major categories of given types of work, such as professional or technical, clerical or managerial, skilled or unskilled. Almost any decision may create an indefensible relationship among diverse occupations, place a domi ant unit in a subordinate position, or merely annoy an interested group. Modifications and complete revisions must be made frequently, to allow for the everchanging occupational picture. In the professional field, criteria include required training, accreditation and licensing regulations, and American tradition. The 1940 census attempted to differentiate between professional and semiprofessional, but this was discontinued in 1950. In presenting comparisons, the Bureau in 1900 warned the reader, "Some changes have been made in the assignment of occupation designations under class heads for the censuses of 1870, 1880, and 1890, in order that the class totals may correspond with those for 1900; consequently the totals * * * differ from those contained in the printed reports for the censuses named."[3] In fact, this problem had been foreseen in 1890, when part II of the population report, pages XCIV to XCIX, indicated the different titles by which occupations were known from 1850 to 1890. At various times, midwives have been classed with trained nurses, and salesmen with accountants. Even if enumerators should give exact descriptions of all occupations, which cannot be expected, this problem would remain.

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*Office of Education; formerly with the Bureau of the Census. Grateful acknowledgment is made to David L. Kaplan and M. Claire Casey, of the Bureau of the Census professional staff, for valuable and timely suggestions. They should not be held responsible for data or conclusions.

[1] *The Seventh Census of the United States: 1850.* Washington, Robert Armstrong, Public Printer, 1853, p. xv.

An important part of the classification problem arises because definitions change from one census to another. "Physician" has always been a listed profession, but no definition is available for the early periods. At least to 1880, "cuppers" and similar healers seem to have been important in this group. In 1850, the census showed 40,564 physicians and 191 surgeons, but the 28 medical schools in the United States claimed only 11,153 graduates up to 1840. The passage of 10 years and the addition of European graduates cannot reasonably account for the entire difference. Of course, many professional persons secured status by virtue of "apprenticeships" instead of by graduation from professional schools. However, inclusion of healing arts practitioners without extensive medical training or experience may be assumed. This problem seems to apply to clergymen, since by 1840 all 39 American theological schools claimed only 4,196 graduates, although the 1850 census showed 26,842 clergymen and 19 missionaries to the Indians. There were many professional lawyers, but the early decennial figures included conveyancers and notaries public, while even the most recent census includes magistrates, trial examiners, and masters among the lawyers and judges. Undoubtedly, there were valid census considerations in such cases.

The final data depend on the responses secured by the census enumerator. If a bookkeeper claims to be an accountant, the tabulation probably will show an accountant. It is understood that some enumerators are not sufficiently skilled for the immense job of a modern decennial census. Even when the work was relatively simple, as in 1820, John Quincy Adams who, as Secretary of State, directed the census, said, "The compensation allowed by the law was esteemed so inadequate for the services required, that it has been found impossible to obtain competent assistance to undertake them."[4] The pay then was 1 cent a name. In 1950 it was 7 cents, but of course more data were required. Although enumerators are carefully trained, it is impossible for them to cover all the features of the occupational structure whose growing complexity increases the chances of response errors. The problem is especially troublesome because the respondent may be unfamiliar with occupational distinctions or may not be the worker himself, as when the housewife furnishes information. In some situations, schedules are checked for consistency between the stated occupation and age, sex, income, and school attainment.

Before 1900, code clerks and other processors were not provided with documents to enable them to be very systematic in determining the most reasonable occupational classification. Since the turn of the century, the Bureau has furnished printed instructions and specifications which are carefully explained and followed. This is one example of procedures that have helped develop the high standards of reliability in census data.

Not as an error, but with a similar effect, is the selective choice of occupation by the respondent. A dentist may consider himself a teacher because he is on a dental school faculty, while the dental association lists him as a dentist; or a drugstore owner may determine that he is a proprietor rather than a pharmacist. Since an individual may not be counted more than once, only one occupation is acceptable. It is an old problem, as shown by the instructions to census enumerators in 1850: "When a person follows several professions or occupations the name of the principal one only is to be given." This has always

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[3] "*Occupations at the Twelfth Census*," U. S. Bureau of the Census, p. L. Washington, Government Printing Office, 1904.

[4] U. S. Department of State. *Census for 1820.* Washington, Gales and Seaton, 1821.

Professional occupation groups in United States Census, by number reported, from 1850 through 1950

Profession	Number reported first time		Number reported					
	Year	Total	1850	1860	1870	1880	1890	1900
1	2	3	4	5	6	7	8	9
Accountants and auditors [2]	1950	383, 496						
Architects	1850	591	591	1, 263	2, 039	3, 375	8, 070	10, 581
Authors [3]	1850	82	82	216	458	1, 131	6, 603	5, 778
Chiropractors	1930	11, 916						
Clergymen [4]	1850	26, 842	26, 842	37, 529	44, 934	64, 698	88, 203	111, 638
College presidents and teachers	1850	943	943	2, 500	([5])	([5])	5, 300	7, 348
Dentists	1850	2, 923	2, 923	5, 606	7, 988	12, 314	17, 498	29, 665
Dietitians and nutritionists	1950	22, 826						
Editors and reporters	1850	1, 510	1, 510	2, 994	5, 375	12, 308	21, 849	30, 038
Engineers, technical [6]	1850	12, 138	12, 138	27, 437	7, 094	7, 061	28, 239	43, 239
Farm and home management advisers [7]	1930	5, 597						
Foresters and conservationists [8]	1910	4, 332						
Lawyers and judges	1850	23, 939	23, 939	33, 980	41, 791	64, 139	89, 630	114, 460
Librarians	1860	65		65	213	([5])	([5])	4, 142
Musicians and music teachers	1850	3, 550	3, 550	10, 354	16, 170	30, 477	62, 155	92, 174
Nurses, professional [9]	1870	1, 204			1, 204	1, 537	4, 589	[10] 11, 804
Optometrists [11]	1940	10, 357						
Osteopaths [12]	1920	5, 030						
Pharmacists [13]	1850	6, 139	6, 139	11, 031	([5])	([5])	([5])	57, 346
Physicians and surgeons [12]	1850	40, 755	40, 755	55, 071	64, 414	85, 671	104, 805	132, 002
Social workers, except group [14]	1910	15, 491						
Teachers [15]	1850	29, 587	29, 587	110, 469	128, 265	226, 032	344, 813	442, 914
Veterinarians [16]	1850	46	46	392	1, 171	2, 130	6, 494	8, 163
Total professions			149, 045	298, 907	321, 116	510, 871	788, 248	1, 101, 292
Total workers [17]			7, 697, 196	10, 532, 750	12, 924, 951	17, 392, 099	23, 318, 183	29, 073, 233
Total population			23, 191, 876	31, 443, 321	39, 818, 449	50, 155, 783	62, 947, 714	75, 994, 575

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[1] For data by sex, see table 1, p. 4.

[2] Classed with bookkeepers and cashiers before 1950, and also with salesmen and ticket agents in some years.

[3] Classed with scientists in 1890 and 1900.

[4] Includes religious workers until 1910, when a separate category was established.

[5] Not reported as a separate occupation, having previously been so reported.

[6] Includes aeronautical, chemical, civil, electrical, industrial, mechanical, metallurgical, and mining engineers; but in 1870 and 1880, only civil engineers and professional surveyors were included.

[7] Shown as "County agents and farm demonstrators" in 1930 and 1940.

[8] Includes foresters, conservationists, forest rangers, timber cruisers, farm planners, fire wardens, fish culturists, insect-control aides, erosion specialists, and some others.

[9] Classed with midwives and untrained nurses prior to 1900, and with student nurses from 1900 to 1940 inclusive. The figures in this table are Census Bureau estimates of trained nurses. Nothing is shown for 1850 and 1860, when the Bureau indicates fewer than 1,000 trained nurses, but makes no specific estimate.

[10] There were also 103,747 "Nurses—not specified," including 11,533 male and 92,214 female. Undoubtedly, many of these were nurses of professional grade, but the number cannot be determined.

[11] From 1910 to 1930 inclusive, optometrists were classed with opticians under the heading "Opticians." Neither occupation appeared from 1870 to 1900, inclusive; but 10 oculists and 154 opticians were enumerated in 1850, and in 1860 there were 83 oculists and 310 opticians.

[12] Included with physicians were osteopaths before 1920, and healers and chiropractors before 1910.

[13] Includes owners, managers, and officials of drugstores classed with pharmacists prior to 1940. For valid comparisons, the table shows this combined figure for 1940 and 1950. Some separate data are available; the 1950 owners, managers, and officials being estimated.

Year	*Classification*	*Male*	*Female*	*Total*
1940	Owners, etc	17,831	2,499	20,330
	Pharmacists	79,831	3,336	83,167
1950	Owners, etc	16,877	4,939	21,816
	Pharmacists	81,641	7,357	88,998

[14] In 1860, there were 1,379 Sisters of Charity who may have been considered as social workers at that time. From 1910 to 1930, inclusive, the category was called, "Social, welfare, and religious workers." The censuses of 1940 and 1950 do not include the religious workers in this group, and they are not shown in this table for those years. The following data are given under the heading of "Religious workers."

Year	*Male*	*Female*	*Total*
1940	9,118	26,054	35,172
1950	12,796	28,976	41,772

[15] Includes school commissioners, superintendents, principals, and instructors concerned with academic, physical education, and vocational subjects in public, private, and parochial schools below college level.

[16] According to authorities, farriers acted as veterinarians during the 19th century, but are not included in this table. The census shows 290 farriers in 1850 and 442 in 1860.

[17] The years 1850 to 1930 show in the working force those persons who are 10 years of age and over, but 1940 and 1950 include only those who are 14 years of age and over.

SOURCE: Publications of the U. S. Bureau of the Census.

Professional occupation groups in United States Census, by number reported from 1850 through 1950—Continued

Profession	Number reported first time		Number reported				
	Year	Total	1910	1920	1930	1940	1950[1]
1	2	3	10	11	12	13	14
Accountants and auditors[2]	1950	383,496	----------	----------	----------	----------	383,496
Architects	1850	591	16,613	18,185	22,000	21,976	25,000
Authors[3]	1850	82	4,368	6,668	12,449	14,126	16,184
Chiropractors	1930	11,916	----------	----------	11,916	10,869	13,084
Clergymen[4]	1850	26,842	118,018	127,270	148,848	140,077	168,419
College presidents and teachers	1850	943	15,668	33,407	61,905	75,847	125,640
Dentists	1850	2,923	39,997	56,152	71,055	70,601	75,025
Dietitians and nutritionists	1950	22,826	----------	----------	----------	----------	22,826
Editors and reporters	1850	1,510	34,382	34,197	51,844	63,493	91,472
Engineers, technical[6]	1850	12,138	88,755	136,121	226,249	277,872	534,424
Farm and home management advisers[7]	1930	5,597	----------	----------	5,597	10,721	12,316
Foresters and conservationists[8]	1910	4,332	4,332	3,653	8,057	([9])	27,052
Lawyers and judges	1850	23,939	114,704	122,519	160,605	180,483	181,226
Librarians	1860	65	7,423	15,297	29,613	38,607	55,749
Musicians and music teachers	1850	3,550	139,310	130,265	165,128	161,536	161,307
Nurses, professional[9]	1870	1,204	82,327	149,128	294,189	371,066	403,793
Optometrists[11]	1940	10,357	----------	----------	----------	10,357	14,711
Osteopaths[12]	1920	5,030	----------	5,030	6,117	6,067	5,167
Pharmacists[13]	1850	6,139	67,575	80,157	104,727	103,497	88,997
Physicians and surgeons[13]	1850	40,755	151,132	144,977	153,803	165,629	192,317
Social workers, except group[14]	1910	15,491	15,491	39,845	64,797	75,197	76,393
Teachers[15]	1850	29,587	599,237	761,766	1,062,615	1,065,280	1,125,683
Veterinarians[16]	1850	46	11,652	13,494	11,863	10,957	13,489
Total professions	------	--------	1,510,984	1,878,131	2,673,377	2,874,258	3,[illegible],770
Total workers[17]	------	--------	7,370,794	42,433,535	48,829,920	52,789,499	59,642,990
Total population	------	--------	91,972,266	105,710,620	122,775,046	131,669,275	150,697,361

been determined by the respondent, although the early requirements stipulated, "* * * insert the specific profession, occupation, or trade which the said person is known and reputed to follow in the place where he resides * * *." Actually, this concerns two distinct situations. In the 1940 and 1950 censuses, a person who held more than one job during the census week was counted in the occupation at which he spent most of his time. There was no room for judgment in this decision. However, if a job could be described in more than one way, as in the case of the pharmacist-proprietor mentioned above, the judgment of the respondent was the deciding factor.

Processing errors are found in all censuses. Modern electrical equipment has reduced some, but introduced new types of errors. Counting or machine-punching errors are among the most serious, especially if they are noncompensating. The problem may appear wherever a small total is entered in a tabular unit or cell. This can be illustrated by the 1950 data for "Musicians and music teachers" and "Foresters and conservationists." In the former, there are nearly as many female as male, with a large grand total. Counting a male as female is not an important error, since the reverse may also occur in about an equal number of cases. Such errors compensate for each other. Among the "Foresters and conservationists," however, there are only 859 female to 26,193 male. This means only one chance in 30 that an error will be balanced. It becomes a noncompensating error. In fact, the number of females may be incorrect in this case, as it indicates a remarkable and unexplained increase over 1930 (the 1940 census did not show this occupation) when there were 8,042 male and only 15 female. This situation is also evident among the veterinarians, since there were 10,858 male and 99 female in 1940, but 12,634 male and 855 female in 1950 when the American Veterinary Medical Association claimed only about 150 female veterinarians in the United States. This type of error was usually corrected in earlier censuses, but unfortunately in recent censuses the Bureau could not recheck unusual jobs for women that seemed disproportionately high, because the limited budget had to be used for other purposes.

It is now obvious that variations among censuses may arise because of differences in definitions, scope, enumeration procedures, processing techniques, and publication rules. These and other problems directly related to the counting of the population make decennial census comparisons extremely hazardous, so that the greatest caution must be observed. Fortunately, some of them do not greatly affect the professions. Various censuses were concerned with occupations of persons over 10 years of age, while others considered 14, 15, or 16 years. Professions do not come within any of these minimal ages. Slaves were not enumerated by specific occupations, but probably there were no professional workers among them. Prior to 1940, the censuses included seasonal workers, employed inmates of many institutions, people unable to work, and retired persons. The last two groups may have affected the returns for the professions, producing data before 1940 for which the inadvertent weighting cannot be properly measured. Of greater significance is the fact that in 1940 and 1950 the occupation census data refer to those persons actually employed or looking for work (called the labor force), while in previous years data refer also to the experienced persons who reported a gainful occupation regardless of whether they were working or looking for work (designated as "Gainful workers"). This distinction could have an important effect on the statistics of professions, since, for example, licensed graduates who had not yet secured employment or opened an office would not be considered gainful workers, but would be counted as part of the labor force.

Statisticians and others have long been concerned with these problems. A significant result of efforts to correct the situation was the procedure developed by the late Alba M. Edwards,[4] of the Census Bureau. Although no officially acceptable work has been done to make adjustments for differences in counting the population, such as arise from omitted entries, seasonal workers, and retired persons, Dr. Edwards developed adjustment factors for the differences in classification of occupations from 1870 t
1930. The base for comparisons was establishe
as the system used in 1930. Since data for 1940 an
1950 were collected on a different concept of occupa
tions, no adjustment has been attempted by th
Bureau. The figures in the accompanying tab
reflect these modifications of the original statistic
for 1870 to 1930.

Even with the recognition of these limitations an
the adoption of many precautions, the compariso
of decennial statistics remains a perplexing procedu
in occupational fields. Application of adjustmen
factors and other statistical methods, including th
use of test samples, has merely decreased some
the dangers without eliminating them. It must b
remembered that occupation census data are in
tended to show general trends rather than preci
numerical changes in the number of workers. N
large-scale enumeration may claim complete acc
racy, and a census of the professions should not
regarded as an exact count of practitioners.
should be understood that no attempt is made
include everyone. A significant omission is th
number of dentists, doctors, teachers, veterinarian
and other professional workers who are outside th
continental United States with the Armed Force
foreign aid programs, and for other reasons. Th
Census Bureau[5] has developed a detailed statemen
of most problems involved in enumeration.

How does the Census Bureau determine whi
occupations are "professional"? As a matter
fact, it does not do that. It did not make such
determination in 1950, when the major heading
"Professional, technical, and kindred workers" w
used. A definition of profession was published a
used in 1940 by Bureau officials (see p. 2), b
greater reliance is placed on the decennial Cens
Classified Index of Occupations and Industri
which lists the occupations under each of the maj
classifications. One little-known problem aris
from the many requests received from groups d
siring professional recognition for such purposes
the enhancement of social prestige, the securing
funds, or the granting of military commissio
To avoid inevitable repercussions, the less speci
delineation of professions that arises through co
bination with other groups has been adopt

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[4] Edwards, Alba M., *Comparative Occupation Statistics for the United States, 1870 to 1940.* Table 8. Washington, Government Printing Office, 1943.

[5] U. S. Bureau of the Census. U. S. Census of Population: 1950. Vol
Characteristics of the Population, Part I, United States Summary. p
Washington: Government Printing Office, 1953.

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*Prepared by Theresa Birch Wilkins, Research Assistant, Office of Education. Names of institutions where they appear in lists at the ends of chapters are not included in this index.

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